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Associates

April 21, 2003

DATABASE BENCHMARK REPORT



MK -
check this out

**Record Scalability Benchmark
Achieved with 30,000 Concurrent Users**

Test Data	
Application	Sales 7 Application Suite
Database	Microsoft SQL Server 2000 Enterprise Edition 64-bit
Operating System	Microsoft Windows Server 2003, Datacenter Edition
Hardware	Uniplex ES7000-Over 130 ES2041 ES2081

Microsoft

SEBEL

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SCALE-UP PERFORMANCE

MSDN Online
Developer Center

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ONLINE

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How Does Your IT Spending Stack Up?

ROI. Use our new IT Spending Assessment tool and receive an instant benchmark report on how your company's budget compares with those of similar-size organizations. **Q&A:Link a3270**

The True Costs of Software

MANAGEMENT: "Free" software isn't really free, of course. And a simple TCO analysis isn't enough to evaluate it, says Alan MacCormack, an assistant professor of business administration at Harvard. **Q&A:Link a3745**

Keep Up to Date On Sarbanes-Oxley

NEWS: What's the latest on the financial reporting act? What is its IT impact? Check out Computerworld's continuing coverage. **Q&A:Link a3250**

Where Does Your Time Go?

DEVELOPMENT: "Many people get the most done," a developer says. But do they? A lot depends on the kind of "busy" you are, writes columnist Esther Derby. **Q&A:Link a3770**

Hands On: Getting Macs and PCs To Play Well Together

IT professional and technology writer Ryan Faas takes a look at how organizations can tackle the Mac/PC challenge in two basic ways: server-side and client-side software. **Q&A:Link a3729**

What's a Q&A:Link?

On every page in this issue, you'll find a Q&A:Link code pointing to additional, edited content on our Website. Just enter that code into our Q&A:Link box, which you'll see at the top of each page on our site.

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COMPUTERWORLD HONORS

The QoS project at the University of Manchester lets hackers inferential surges through a 3-D display.

Sun Microsystems Banking used a browser front end, middleware and workflow engine to comply with the USA Patriot Act.

New York University expanded its digital library to include electronic journals, sound and moving images.

At the Pacific Northwest National Lab, a Linux supercomputer will help model disaster cleanup scenarios.

India's Oxford Bookstore used an integrated Internet platform to help it become a nationwide retail chain.

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- The Online Store **QuickLink a2420**

AT DEADLINE

Microsoft Settles Lawsuit With AOL

Microsoft Corp. said it will pay AOL Time Warner Inc. \$750 million to settle an antitrust suit filed on behalf of Netscape Communications Corp. in January 2002. Microsoft also will give AOL Time Warner's America Online Inc. division a royalty-free, seven-year license to use Internet Explorer with its client software. The suit claimed that Microsoft illegally harmed Netscape's Web browser business.

J.D. Edwards Reports Q2 Loss

Business applications vendor J.D. Edwards & Co. dropped back into the red during its second quarter, reporting a loss of \$393,000 for the three-month period that ended April 30. Revenue totaled \$203.5 million, down 9% from \$223.6 million a year ago. CEO Bob Dufrenoy said Denver-based J.D. Edwards was affected by smaller transactions as users scaled back purchases.

HP, Ericsson Set To Finalize IT Deal

Hewlett-Packard Co. and LM Ericsson Telephone Co. this week are expected to announce that they have finalized an IT outsourcing deal valued at more than \$1 billion. Stockholm-based Ericsson in April said that it had signed an agreement in principle to hand over management of its IT operations to HP, with a formal deal expected by midyear.

Short Takes

In other HP news, the company this week plans to release a low-end network-attached storage device priced at \$2,999, which is \$5,000 less than its existing entry-level product. ... **ORACLE SYSTEMS INC.** this week is due to announce upgraded software for managing corporate wireless LAN installations.

Microsoft to Introduce Security Certifications

Exams tailored for IT professionals who specialize in security for Windows

BY CAROL SALINA

MICROSOFT CORP. tomorrow will announce its first set of certification credentials for IT administrators and engineers who specialize in security in a Windows environment.

Dan Truax, director of business and product strategy for training and certification at Microsoft, noted that the company has offered security courses for years. But he said Microsoft decided to take the extra step of creating a formal credential in recognition of the number of customers that now specialize in that type of job.

The announcement of the new certifications is scheduled to be made during a keynote address by Scott Charney, Microsoft's chief security strategist, at the company's TechEd 2003 conference in Dallas.

The more rigorous of the two certifications being introduced is the Microsoft Certi-

fied Systems Engineer (MCSE): Security on Microsoft Windows 2000. To achieve that status, an engineer must pass six core exams and demonstrate a "security specialty" by taking a test on Microsoft Internet Security and Acceleration (ISA) Server 2000 or an exam administered by the Computing Technology Industry Association, better known as CompTIA.

The requirements are essentially the same as for an ordinary MCSE certification, except the security candidate has to take the core security des-

ign exam and a security implementation exam that Microsoft introduced in January, along with the ISA Server or CompTIA exam.

The other new certification — Microsoft Certified Systems Administrator (MCSA): Security on Microsoft Windows 2000 — requires the four exams needed for a typical MCSA certification, plus one additional exam. One core

NEW CERTIFICATIONS

Microsoft Certified Systems Administrator: Security on Windows 2000

■ **Core exams:** Client operating system (1), networking system (2), security implementation (1)

■ **Security specialty:** One required (options, installing, configuring and administering Microsoft Internet Security and Acceleration Server 2000, Enterprise Edition or CompTIA Security+)

Microsoft Certified Systems Engineer: Security on Windows 2000

■ **Core exams:** Client operating system (1), networking system (3), security design (1), security implementation (1)

■ **Security specialty:** One required (same options as above)
SOURCE: MICROSOFT CORP.

exam on the client operating system and two on networking systems are mandated along with the security implementation exam and either the ISA Server or CompTIA exam.

Certifications aren't yet available for Windows Server 2003, but they're expected to become available later this year, according to Truax.

Truax said Microsoft was first approached last summer about creating a special secu-

rity credential. Customers and partners subsequently advised the company not to create credentials similar to any that already exist in the industry, but rather to focus on offering a certification specific to the Microsoft software environment, he said. "Our goal was to complement what exists in the industry, not to compete with it," Truax said.

How important the new certifications will be to IT shops is unclear. Charles Emery, senior vice president and CIO at Horizon Blue Cross Blue Shield of New Jersey in Newark, said he views the new Microsoft programs as positive for the industry. But he also noted that Horizon Blue Cross Blue Shield doesn't use certifications as hiring criteria, because it has found that certification holders have no practical experience.

Mike Lines, an Indianapolis-based manager of technical integration at Bell Industries Technology Group, said that as a provider of outsourced IT services, his company requires all of its engineers to carry the MCSE credential. Lines said he definitely will have a couple of engineers take the new security certification exams.

But one certified Microsoft trainer, who asked not to be identified, said it's difficult for any vendor to develop a security curriculum for its own products. He said third parties, such as the SANS Institute, tend to take a more critical and thorough approach. ■

ALSO AT TECHED

Microsoft will announce the availability of Release Candidate 1 of Exchange Server 2003.

Q: QuickLink 30624
www.computerworld.com

Microsoft Set to Ship NAS Upgrade to Storage Vendors

At TechEd, Microsoft today plans to announce that it will release the third generation of its network-attached storage (NAS) software to hardware vendors this month. Added features are designed to let the Windows-based technology be used in a wider range of storage devices.

The Windows Powered NAS upgrade was unveiled as part of Microsoft's Windows Server 2003 rollout in April and includes

new Virtual Shadow Copy Service and Virtual Disk Service middleware components, plus a software driver that supports the Internet SCSI storage interconnect standard.

Claude Lovenson, product manager for Microsoft's enterprise storage division, said the Server Appliance Kit 2003 release of the NAS software should start appearing in storage devices by September.

Analysis said Microsoft's latest release will put more pressure on NAS software rivals like Network Appliance Inc. in Sunnyvale, Calif., and Snap Appliance Inc. in San Jose. NetApp and Snap are among the hottest storage vendors that have yet to team up with Microsoft, which in late April announced a deal under which EMC Corp. will sell Windows Powered NAS on its Clarion midrange arrays.

According to Pushan Rinnen, an analyst at Gartner Inc. in Stamford, Conn., Microsoft more than doubled its NAS revenue last year and had a 15% share of the \$1.4 billion market. In comparison, NetApp had a 37% market share, Rinnen said.

Despite that gap, Microsoft is starting to nip at NetApp's heels, said Dennis Martin, an analyst at Evaluator Group Inc. in Englewood, Colo. "It's just the fact that they're making it easy for OEMs to sell this stuff," he said.

—Lucas Marten

Legal Threat Won't Deter Linux Adoption for Now, Users Say

But uncertainty raises concerns about future plans

BY PATRICK THIBODEAU

The SCO Group Inc.'s claim that the Linux kernel contains large blocks of illegal code isn't stalling corporate adoption of the open-source operating system. But the case is clearly getting the attention of many IT managers, and some said the uncertainty it's creating could have an impact on future Linux implementation plans.

Lindon, Utah-based SCO, which in March filed a \$1 billion lawsuit against IBM alleging misappropriation of trade secrets and unfair competition (QuickLink 36901), now claims that sections of the Linux kernel — in chunks of code as large as 15 lines — were copied from its Unix System V operating system. In May, the company sent letters to all Fortune 1,000 and Global 500 companies with a vague warning that using Linux could put them at legal risk (QuickLink 3854). But so far SCO's actions don't appear to be affecting corporate retooling.

"I have not heard of the lawsuit substantially altering people's plans for Linux deployment," said Jim Rattan, president of the Portland, Ore., chapter of the Chicago-based Society for Information Management. "It's something most companies are observing closely but aren't too worried that there will be substantial end-user complications."

PROVE IT

Novel challenges SCO to prove its Linux allegations:

QuickLink 38754

Full coverage: Additional stories on the case are available at

QuickLink 38200
www.computerworld.com

Duke Energy Corp. in Charlotte, N.C., for instance, is proceeding apace with its Linux adoption, said Bruce Anderson, the company's general manager of IT strategies and technical architecture. Like a lot of large companies, Duke Energy has Linux on limited-function appliance devices.

Dan Agronow, vice president of technology at Weather.com and Weather Channel Enterprises Inc. in Atlanta, said SCO's actions raise more questions than answers.

"It's having no effect at all" on Linux use at his company, said Agronow. "There's too much uncertainty."

The uncertainty and skepticism over SCO's claim stem from a lack of proof. SCO said that beginning next week, it will show its source code to analysts who agree to sign a nondisclosure agreement. But it may have trouble getting takers.

Giga Information Group Inc. analyst Stacy Quandt said she is wary that signing a nondisclosure agreement could prevent her from discussing the legitimacy of SCO's claims. She called the offer a PR stunt. "[SCO] should tell everybody what they have," said Quandt, who has advised clients of Cambridge, Mass.-based Giga to continue with their Linux adoptions.

George Weiss, an analyst at Gartner Inc., who recently recommended minimizing Linux adoption in complex, mission-critical systems until the merits of SCO's claims or also judgments are clear, has also been talking to SCO. He said he's leaning against accepting SCO's offer, noting that SCO is making its case based on

"vague inferences" and is asking analysts to do the same. "It's stepping right into their shoes," he said.

Regardless of the uncertain-

ties, legal experts said users have to pay attention. "The fact that you ignored it could potentially cause your damages to increase substantially," said Brian E. Ferguson, an attorney in McDermott, Will & Emery's Washington office. "The ostrich's head-in-the-sand approach is definitely not an option."

Until the case is resolved, Peter Mojica, a vice president at AXS-One Inc., a Rutherford, N.J., supply chain software vendor, said he expects companies will at least consider the legal challenge before proceeding with Linux adoptions.

May 12, 1993

Don Thomas 1993 Company

SCO Group Inc. has filed a lawsuit with the SCO Group Inc. (SCO) against IBM Corporation (IBM) for allegedly misappropriating SCO's trade secrets and intellectual property. The lawsuit alleges that IBM has used SCO's trade secrets to develop and market its own operating system, OS/2, and that IBM has also used SCO's trade secrets to develop and market its own hardware products.

In several cases, SCO has alleged that IBM has used SCO's trade secrets to develop and market its own operating system, OS/2, and that IBM has also used SCO's trade secrets to develop and market its own hardware products.

"It will definitely chill it," said Mojica, although he noted that Linux will still be widely adopted in the long run. "It is kind of hard to stop the open-source train," he said.

Barry Brunetto, director of information systems at Port-

land, Ore.-based sporting goods and power equipment manufacturer Blount International Inc., said SCO's legal claims may be a factor in any strategic Linux decision his company makes. "It does play into our mind," he said. ■

Reporter Todd R. Weiss contributed to this story

SCO Official Defends Linux Attack

The SCO Group claims that beginning next week, it will show analysts where the Unix code it owns has been illegally copied into the Linux kernel. In an interview with Computerworld's Patrick Thibodeau, Chris Searles, senior vice president and general manager of SCOsource, the division of SCO Group that's in charge of protecting the company's intellectual property, discussed SCO's position.

Why should Linux users take your claim seriously? Think about it: I own the CO of a company and I'm going to be running my business on an operating system that has an intellectual property foundation that, by almost everyone's admission, is built on quackery.

There is no mechanism in Linux to ensure [the legality of] that intellectual property — the source code being contributed by various people.

Your recent letter to 1,500 user companies outlining your claim was vague. What is it that you want from these

companies? The one thing that we specifically want from these 1,500 companies is that they send those letters to us for them to not take that word on the warning that we sent... but to seek an opinion of their legal counsel as to the issues that we raised.

Should companies remove Linux from their systems? We're not making any specific recommendations at this time.



Are you considering suing Linux users that your newsletter? Anything is always a possibility. If you are going to enforce your contracts, claims and intellectual property, you have to be able to go to ultimately the endpoint of infringement.

How many lines of code in the Linux kernel are a direct copyright violation? It's very extensive. It is many different sections of code ranging from five to 10 to 15 lines of code in multiple places that are of issue, up to large blocks of code that have been inappropriately copied into Linux in violation of

our source-code licensing contract. That's in the kernel itself, so it is significant. It is not a line or two here or there; it was quite a surprise for us.

Why did Microsoft decide to get a license from you? Completely unrelated. Microsoft has been adding more and more Unix compatibility and Unix interoperability into their products. We got in contact with them early last year to let them know that we had concerns about if they had all the appropriate intellectual property necessary to be providing that Unix capability.

We ended up in negotiations where they have licensed some of our Unix Systems V intellectual property from us for use in their Services for Unix products.... They recognized that it was important to have appropriate intellectual property licenses for the property they are using.

Have you made a similar licensing offer to the 1,500 companies that received your letter? We have no specific program or solution for solving this Linux intellectual property problem right now.



BRIEFS

Microsoft Forms Security Team ...

Microsoft Corp.'s IT security business unit has set up a group that will establish new software development processes and look at security issues across all its product lines. The Security Engineering Strategy team will have about 10 workers recruited from inside and outside Microsoft, said director Scott Lipner. The company needs "to do a more coherent job" of trying to limit security flaws, he added.

... And Warnings of Software Flaws

Microsoft also issued two bulletins warning of vulnerabilities in its Web server and Windows Media Services software. It released patches designed to fix the flaws, none of which were given a "critical" severity rating. In addition, Microsoft pulled from its Web site an updated implementation of the IISpec security protocol for Windows XP after some users reported problems.

Symantec, DISA Sign Security Deal

Symantec Corp. announced a three-year deal to provide the U.S. Defense Information Systems Agency (DISA) with early-warning information about IT security threats and cyberattacks. The data will complement other systems at DISA and will be used to formulate recommendations for protecting IT assets within the Pentagon, the Cupertino, Calif.-based company said.

Short Takes

DELL COMPUTER CORP. said that EASTMAN CHEMICAL Co. in Kingsport, Tenn., is buying about 10,000 desktop and notebook PCs in a \$16 million upgrade deal. ... IBM announced a low-end Unix server that's based on its Power4+ microprocessor, completing a shift of its systems to that chip.

MARK HALL • ON THE MARK

HP to Update OpenView Road Map...

... later this month, says Todd DeLaughter. He's OpenView vice president at Hewlett-Packard Co., so he should know. But he's a bit mum on the details, revealing only that Service Desk 4.5 will be bumped to Version 5.0 and include **more automated problem-resolution capability**. According to DeLaughter, "We view service management as not the endgame. We want network management to evolve into adaptive services." (That's HP's phrase for utility computing.) He adds that the

industry is moving toward automating problem resolution with the help of IT management systems like OpenView. "It's a trust that builds over time," he says. OpenView user Joe Madden, director of managed services for three data centers run by Comenius Inc. in Salt Lake City, has an interesting take on what trusts products like OpenView to identify problems and fix them without human intervention. "System administrators and DBAs shun more willingness to accept automation," he observes. "Network guys are less inclined." Why's that? Madden thinks operating systems and databases

products manage unstructured data, despite the fact that **10 times as much corporate information** is stored in unstructured formats such as e-mails, Web pages and whatnot. Prabhakar Raghavan, chief technology officer at Verity Inc., grouches that if you look at market capitalizations (outsider shares multiplied by share price) of database companies and compare them with the slow of search, document management and content management businesses, you'll see that the stock market prefers database vendors. (That's probably because Google Inc. is still a private company.) **But that may change in**

three to five years, he says, as unstructured data search tools become even more analytical and add advanced XML queries. Databases will be constrained in this area because of their rigid schemas. Verity isn't waiting until then to make improvements to its products. At the end of this month, the Sunnyvale, Calif.-based search technology vendor plans

A new filtering tool, *Chaperone for Exchange* from Bullitt, Va.-based C.P.A. Systems LLC, goes into beta-testing in two weeks, not with ship by the end of July. The product filters out spam and runs keyword searches on outgoing e-mail to prevent carrying secrets from finding their way into the wrong hands. Pricing hasn't been set.

3Com Readies Low-Cost Gigabit Switches

BY MATT HANDEL

3Com Corp. today plans to expand its line of switches for small and medium-size businesses by announcing five Gigabit Ethernet devices.

The new switches range in price from \$149 for a model with eight ports — only one of which is capable of Gigabit Ethernet performance — to \$3,495 for a system with 24 Gigabit Ethernet ports, said Robert Winch, director of product management at Santa

Clara, Calif.-based 3Com. Two of the switches are desktop models, and the other three are rack-mountable. All five are due this summer.

Kirk McClanahan, network administrator at CSA Travel Protection in San Diego, said the insurance provider plans to add two switches to its network to move information between 175 desktop PCs and its data storage devices.

Data-transfer workloads on CSA's network are expected to

increase because of corporate growth, McClanahan said. He added that CSA "needed to increase the available speed without spending a lot."

3Com is one of several leading vendors in the market for unmanaged switches, which operate without relying on the Simple Network Management Protocol and functions that typically help IT administrators monitor network access and usage, said Joshua Johnson, an analyst at Synergy Re-

search Group Inc. in Phoenix. "Compared to many segments of networking, this is one area that's growing," Johnson said, adding that annual sales of unmanaged switches total about \$500 million. Other top vendors include Dell Computer Corp., D-Link Systems Inc., Netgear Inc. and Linksys Group Inc. Sales of switches supporting Gigabit Ethernet data rates should also see growth, "because the difference in price over standard Ethernet is minimal," said Zeus Kervallia, an analyst at The Yankee Group. ■

to ship the 5.1 upgrade of its Ultraseek search engine, adding a new graphical user interface tool to lay out query results and sprucing up its analytical functions. • Once you find all the data you need, you'll want to do something with it. The folks at Somerville, Mass.-based Spindle Inc. would appreciate it if you ran it through AnalysisIndeks, a **new and free module available today** in DecisionSite 7.2, the company's business-intelligence software. The tool makes it pretty simple for users to capture data from a variety of sources, annotate it and then share it with others via e-mail in an HTML format with a single mouse click. • Naturally, all that data has got to live somewhere, and it will increasingly reside in a storage-area network (SAN) or network-attached storage (NAS) environment. You'll have more options by month's end, when Spinnaker Networks LLC in Pittsburgh ships Spinserve 4100. The new NAS device can manage a single file as big as 22TB. (Or, slightly bigger than the size of a certain editor in chief's internal memo.) And a six-node cluster of the 4100 can handle 10 petabytes of data. (Room for plenty of memos.) Marketing vice president Jeff Horning displays a remarkable honesty in admitting that his young start-up "is behind companies with longer histories in terms of offering a complete solution." But the 4100, whose little brother the 3300 shipped last year, already integrates into most SAN environments and works with Advanced Technology Attachment drives from Nexan Inc. The major drawback might be in backup applications. Right now, it works only with backup software from Veritas Software Corp. Horning says you can expect to see compatibility soon with backup products from Legato Systems Inc., Tivoli Software and Computer Associates International Inc. All this for less than \$70,000. ■

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Symantec Corp. announced a three-year deal to provide the U.S. Defense Information Systems Agency (DISA) with early-warning information about IT security threats and cyberattacks. The data will complement other systems at DISA and will be used to formulate recommendations for protecting IT assets within the Pentagon, the Computer, Call-based company said.

Short Takes

DELL COMPUTER CORP. said that EASTMAN CHEMICAL CO. in Ringport, Tenn., is buying about 14,000 desktop and notebook PCs in a \$5M annual upgrade deal. ... IBM announced a low-end Unix server that's based on its PowerPC microprocessor, completing a shift of its systems to that chip.

MARK HALL • ON THE MARK

HP to Update OpenView Road Map ...

... later this month, says Todd DeLaughter. He's OpenView vice president at Hewlett-Packard Co., so he should know. But he's a bit mum on the details, revealing only that Service Desk 4.5 will be bumped to Version 5.0 and include **more automated problem-resolution capability**. According to DeLaughter, "We view service management as not the endgame. We want network management to evolve into adaptive services." (That's HP's phrase for utility computing.) He adds that the

industry is moving toward automating problem resolution with the help of IT management systems like OpenView. "It's a true task that builds over time," he says. OpenView user Joe Madden, director of managed services for three data centers near by Consensus Inc. in Salt Lake City, has an interesting take on who treats products like OpenView to identify problems and fix them without human intervention. "System administrators and DBAs show more willingness to accept automation," he observes. "Network guys are less inclined." Why's that? Madden thinks operating systems and databases suffer from **persistent patching problems**, which makes automatic patch services very desirable. Network problems tend to be intermittent, inconsistent and, at times, just plain inexplicable, which makes human intervention invaluable. • If you invest in IT vendors, you may have noticed that database companies are prized by Wall Street more than firms whose

products manage unstructured data, despite the fact that **10 times as much corporate information is stored in unstructured formats** such as e-mails, Web pages and whatnot. Prabhakar Raghavan, chief technology officer at Verity Inc., grouches that if you look at market capitalizations (outstanding shares multiplied by share price) of database companies and compare them with the slew of search, document management and content management businesses, you'll see that the stock market prefers database vendors. (That's probably because Google Inc. is still a private company.) **But that may change in**

three to five years, he says, as unstructured data search tools become even more analytical and add advanced XML queries. Databases will be constrained in this area because of their rigid schemas. Verity isn't waiting until then to make improvements to its products. At the end of this month, the Sunnyvale, Calif.-based search technology vendor plans

to ship the 5.1 upgrade of its Ultraseek search engine, adding a new graphical user interface tool to lay out query results and sprucing up its analytical functions. • Once you find all the data you need, you'll want to do something with it. The folks at Somerville, Mass.-based Spofire Inc. would appreciate it if you ran it through AnalysisBuilder, a new and free module available today in Analysis 7.2, the company's business-intelligence software. The tool makes it pretty simple for users to capture data from a variety of sources, annotate it and then share it with others via e-mail in an HTML format with a single mouse click. • Naturally, all that data has got to live somewhere, and it will increasingly reside in a storage-area network (SAN) or network-attached storage (NAS) environment. You'll have more options by month's end, when Spinnaker Networks LLC in Pittsburgh ships SpinServer 4100. The new NAS device can manage a single file as big as 22TB. (Or, slightly bigger than the size of a certain editor in chief's internal memo.) And a six-node cluster of the 4100 can handle 11 petabytes of data. (Room for plenty of memories.) Marketing vice president Jeff Hornung displays a remarkable honesty in admitting that his young start-up "is behind companies with longer histories in terms of offering a complete solution." But the 4100, whose little brother the 3000 shipped last year, already integrates into most SAN environments and works with Advanced Technology Attachments drives from Nexan Inc. The major drawback might be in backup applications. Right now, it works only with backup software from Veritas Software Corp. Hornung says you can expect to see compatibility soon with backup products from Legato Systems Inc., Tivoli Software Inc. and Computer Associates International Inc. All this for less than \$70,000. ■



3Com Readies Low-Cost Gigabit Switches

BY MATT HANBLIN

3Com Corp. today plans to expand its line of switches for small and medium-size businesses by announcing five Gigabit Ethernet devices.

The new switches range in price from \$149 for a model with eight ports — only one of which is capable of Gigabit Ethernet performance — to \$349 for a system with 24 Gigabit Ethernet ports, said Robert Winch, director of product management at Santa

Clara, Calif.-based 3Com. Two of the switches are desktop models, and the other three are rack-mountable. All five are due this summer.

Kirk McClanahan, network administrator at CSA Travel Protection in San Diego, said the insurance provider plans to add two switches to its network to move information between its desktop PCs and its data storage devices.

Data-transfer workloads on CSA's network are expected to

increase because of corporate growth, McClanahan said. He added that CSA "needed to increase the available speed without spending a lot."

3Com is one of several leading vendors in the market for managed switches, which operate without relying on the Simple Network Management Protocol and functions that typically help IT administrators monitor network access and usage, said Joshua Johnson, an analyst at Synergy Re-

search Group Inc. in Phoenix.

"Compared to many segments of networking, this is one area that's growing," Johnson said, adding that annual sales of unmanaged switches total about \$500 million. Other top vendors include Dell Computer Corp., D-Link Systems Inc., Netgear Inc. and Linksys Group Inc.

Sales of switches supporting Gigabit Ethernet data rates should also see growth "because the difference in price over standard Ethernet is minimal," said Zsolt Kervallay, an analyst at The Yankee Group. ■

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System Crashes Linked to Centrino, VPN Client Glitch

New Intel mobile chip set incompatible with Nortel's software, possibly others

BY BOB BREWIN

INTEL CORP. last week turned off software used by its Centrino mobile chip set because of incompatibility problems that can cause some notebook and laptop PCs to be hit by blue-screen system crashes if users try to run virtual private network (VPN) client software.

The problems came to light after Nortel Networks Ltd. acknowledged that the operating system on Centrino-based

PCs can stop functioning when Nortel's Connectivity VPN software is installed. A posting on Intel's Web site indicates that the suspected cause of the system crashes could apply to any VPN client package.

Mike Schevynayre, a software engineer at Nortel, said the Brampton, Ontario-based company has determined that the conflicts between Connectivity and Centrino stem from the use of an adapter-switching feature in the Intel-developed

software used to manage wireless LAN setup profiles and other functions on PCs.

The adapter-switching component of Intel's PROSet software lets end users automatically switch from wired to wireless connections, Schevynayre said. But a work-around developed by Nortel requires IT departments to uninstall the PROSet drivers, according to a technical bulletin that the company released May 14.

Big Problem, No Solution

Jonathan Jordan, a LAN engineer at a large textile company in South Carolina, is experi-

encing firsthand the incompatibility between Centrino and Nortel's VPN software. Jordan said he ordered "hundreds" of Centrino-based laptops from Dell Computer Corp., only to discover that installing the Connectivity client "causes the PC to blue-screen upon reboot."

He added that he has worked on the problem with Dell and Nortel for more than a month, but the vendors still don't have a viable solution. Nortel's work-around disables useful functions in PROSet, Jordan said, and unless the problem is resolved, his company "may have to move away from the Intel Centrino chip set."

Intel spokesman Daniel Francisco confirmed that the incompatibility issue involves the adapter-switching feature but said that Intel thinks most Centrino-based systems are al-

The mobile chip technology currently supports WLAN access only via the 802.11b standard.

Intel now says it will offer Centrino with Intel 802.11a and 802.11g WLAN support by the fourth quarter.

ready being shipped with that functionality switched off.

An advisory that's posted on Intel's Web site and dated Feb. 26 — nearly two weeks prior to Centrino's official launch on March 12 — says the adapter-switching feature "must be disabled when VPN client software is in use."

Seattle-based WatchGuard Technologies Inc. and San Jose-based Secure Computing Corp., two other vendors of VPN clients, said they're investigating whether there are any conflicts between Centrino and the products they sell. The Centrino architecture, which has been widely adopted by hardware vendors, includes a Pentium-M mobile processor and a supporting chip set that helps manage power consumption, graphics cards and the Universal Serial Bus ports on PCs.

Schevynayre said the operating system freezes appear to occur only on Centrino-based models that include an 855GM version of the onboard graphics and power management controller. PCs with Intel's 855PM chip set don't appear to be affected, he added.

Chris Kuepp, an analyst at Meta Group Inc. in Stamford, Conn., said he finds the fact that Intel didn't build plug-and-play VPN client support into Centrino "baffling." But he noted that it illustrates the fact that vendors of mobile and wireless technology have done a poor job of addressing users' security requirements. ■

Tools Help Administrators Secure Mobile-Device Data

Ability to control network access a growing concern

BY JAHIMAR VIJAYAN

The mushrooming use of mobile devices such as PDAs and smart phones is creating a growing security problem, and companies have few tools to deal with it.

But that's changing. This week's Gartner IT Security Summit in Washington will feature products from two vendors that are intended to help companies secure critical data on mobile devices.

One of the vendors is Credant Technologies Inc., a Dallas-based company that's partly funded by Intel Corp. Credant's Mobile Guardian software lets companies centrally manage security-policy administration and on-device policy enforcement, according to the company. With it, administrators will be able to track and control mobile device usage on their networks, as well as protect the data stored on

such devices via encryption and tight access control.

The other vendor is Baltimore-based Bluefire Security Technologies Inc. Its Mobile Firewall Plus technology features an on-device firewall that protects data on the system and provides a logging and alerting service that lets administrators track device usage and system compromises, company officials said.

Red Flag

Such tools are aimed at addressing growing security concerns related to the use of nonsecure mobile devices on enterprise networks, said Sally Hudson, an analyst at IDC in Framingham, Mass.

As users increasingly move to sync mobile devices with their office systems, corporate information may be getting downloaded to those devices with little or no protection.

"Enterprises are waking up to the fact that it is important to monitor and control this flow," Hudson said.

The 22-hospital Banner

Health system in Phoenix is testing Credant's software to determine whether it can protect patient health information stored on mobile devices.

"There's a lot of data that's being put on these devices," said Dave Jahne, a senior security analyst at Banner. "Since the HIPAA regulations came

out, we are looking for ways to secure that data."

The expectation is that Credant's technology will allow Banner to impose and enforce strict security policies related to the use of such devices and the data stored on them, Jahne said.

Despite the promised benefits, these products aren't faultless. The large size of the Credant agent software installed on mobile devices could be a problem for some users, according to Jahne. Meanwhile, Bluefire acknowledges that its technology can do little to detect and stop unauthorized mobile devices from logging onto networks.

Even so, user concerns will fuel increasing demand for mobile-security products such as firewalls, encryption technology and tools for intrusion detection, authentication, authorization and access control, according to Hudson. IDC expects the market for these products to grow 71% annually, from \$84.5 million in 2002 to over \$1.2 billion in 2007.

Other vendors in this small but growing market include Pointwise Mobile Technologies AB in Stockholm and E-Secure Corp. in Helsinki, Finland. ■

NEW PRODUCTS

Credant Mobile Guardian

■ An on-device policy enforcement agent that encrypts and controls access to data on the mobile devices.

■ A "gatekeeper" agent that's installed on all systems that a mobile device can synchronize with.

■ A centralized management, auditing and reporting component.

Bluefire Mobile Firewall Plus

■ Encryption of data and enforcement of on-device passwords to access data.

■ A device-level manager for alerting administrators of changes in settings and files.

■ An enterprise manager for centralized administration.

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System Crashes Linked to Centrino, VPN Client Glitch

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Tools Help Administrators Secure Mobile-Device Data

Ability to control network access a growing concern

BY JAKUBAR VIJAYAN

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■ An enterprise manager for centralized administration.



Veri

AT&T Aims Network Services At Storage and Hosting Users

Business-continuity offerings include data backup, remote server monitoring

BY MATT HAMBLIN

AT&T CORP. last week announced two network services, one that connects corporate systems to data backup sites and another that lets IT managers remotely monitor servers hosted by AT&T in its data centers.

The StorageConnect Service and Direct Control offerings work with a variety of other services focused on business reliability. For example, StorageConnect can be combined with AT&T's Ultra-secure Storage Service, a partnership set up two years ago with Hopkinton, Mass.-based EMC Corp. to provide managed storage, said Bernie McElroy, vice president of business continuity and high-availability services at AT&T.

The new services expand AT&T's effort to move beyond its traditional role as a seller of network pipes, said Zeus Kerravala, an analyst at The Yankee Group in Boston. No other telecommunications carrier is offering as comprehensive a set of business-continuity services, he added.

According to McElroy, StorageConnect is an end-to-end managed connection service, offering a network pipe provisioned with a storage networking protocol that connects a company's primary data center to a backup location. Users can choose one of three service-level agreements depending on their data availability needs, and AT&T will set up the connections and offer consulting help.

Atlanta-based Worldspan LP, which operates a computerized reservation system for the travel industry, has been using StorageConnect since April to link EMC Symmetrix

storage arrays at a production data center with a backup IT facility.

David Lauderdale, Worldspan's chief technology officer, said the company replicates up to 12TB of information once or twice a day between the two data centers. Eventually, Worldspan expects to expand the amount of replicated data to 20TB, he added.

The AT&T service replaced

a laborious system of performing nightly tape backups in the main data center, then shipping the tapes to a vault for archiving. "We had rooms full of tape drives and rooms full of people," Lauderdale said.

StorageConnect costs about the same as the tape backup system did, Lauderdale said. But, he added, "I've got a totally new, remote, state-of-the-art business-continuity infra-

structure for the price of 1990 tape technology."

Direct Control gives AT&T's managed services customers the ability to remotely perform systems administration functions on servers housed at its U.S.-based data centers. Using Web browsers, IT managers can handle tasks such as setting capacity-utilization thresholds and viewing real-time alarm notices, AT&T said.

Luring Customers

AT&T is using services like Direct Control to try to lure more customers into signing managed storage agreements or other IT deals involving its data centers, said Melanie Poney, an analyst at IDC in Framingham, Mass.

"A couple of years ago, this wouldn't have happened from a [network] services provider," she said. "But they're now saying they'll be as flexible as any business need to be to get your business." ▀



Symantec Upgrades pcAnywhere Remote Connectivity Software

New version ups speed, adds more flexible interface

BY MATT HAMBLIN

Symantec Corp. today plans to announce pcAnywhere 11.0, an upgraded release of its remote-access software that features performance improvements and a revised user interface for IT help desk administrators.

The pcAnywhere technology, which was initially released in 1986 as a connectivity tool for remote users, has emerged in recent years as a help desk support tool. The software provides help desk workers with remote system control functions, including the ability to take over a PC in the field and transfer files or patches, said David Scott, a senior product manager at Symantec in Cupertino, Calif.

The new version can transfer needed files in the background while IT administrators continue to work their Scott said. He added that the revamped user interface looks more like Windows XP and offers increased configuration flexibility, making it possible to reduce the size and number of tool bars and other features.

The Burlington Northern and Santa Fe Railway Co. (BNSF) in Fort Worth, Texas, has about 250 pcAnywhere users and is beta-testing the 11.0 release, said Brian Cook, a field service engineer at Wabtec Corp. Cook works at BNSF under an IT services contract between the railway company and Wilmerding, Pa.-based Wabtec. The up-

graded software provides faster remote connections and better response-time performance than existing versions of pcAnywhere, and it has a

PRODUCT DETAILS

pcAnywhere 11.0

NEW FEATURES

- Supports RSA Security Inc.'s SecureID two-factor user authentication technology.
- Allows help desk personnel to send a full-host version of pcAnywhere to PCs so they can remotely install the software.
- Includes file-transfer functions for sending software drivers and patches to PCs as a background process.

PRICING AND AVAILABILITY

- Starts at \$200 per seat; due for release this month.

better look and feel, he said.

One big benefit of using pcAnywhere is that it lets help desk staffers take control of PCs so they can show users how proprietary BNSF applications work, Cook said. And if a user's system won't start,

pcAnywhere can be used to access a fail-over copy of his data at a backup site in Topeka, Kan., and restore the PC.

"I have no qualms with this product," Cook said. "If they raised the price, people would still buy it."

Framingham, Mass.-based IDC recently reported that pcAnywhere commands more than 50% of the global market for remote systems control software, outpacing products from Symantec's four major competitors: Tivoli Software, Computer Associates International Inc., LANDesk Software Ltd. and Danware Data A/S.

"The remote-control market is very mature, so products are at a very high level of functionality," said IDC analyst Stephen Drake.

Products like pcAnywhere also face competition from the free remote-control capabilities that Microsoft Corp. has built into Windows XP, Drake added. The market for remote-control software will stay about level with last year's sales of \$268 million for several more years, he predicted. ▀

On the market The new release of the remote-access software, Symantec's pcAnywhere 11.0, is designed to help IT help desk administrators manage remote systems. The software provides help desk workers with remote system control functions, including the ability to take over a PC in the field and transfer files or patches, said David Scott, a senior product manager at Symantec in Cupertino, Calif.

Industry impact "Symantec's pcAnywhere 11.0 is a significant upgrade from the previous version, offering improved performance and a more user-friendly interface. The software provides help desk workers with remote system control functions, including the ability to take over a PC in the field and transfer files or patches, said David Scott, a senior product manager at Symantec in Cupertino, Calif.

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BRIEFS

CSC Signs Two Outsourcing Deals

Computer Sciences Corp. (CSC) announced a pair of big IT outsourcing deals, including a 10-year, \$730 million contract with Marconi Corp., a London-based telecommunications equipment maker. El Segundo, Calif.-based CSC said it has also signed an outsourcing deal valued at \$450 million over 10 years with ISS A/S, a Copenhagen-based company that provides facility cleaning and landscaping services.

Sprint Slows Down Network Rollout

Sprint Corp. said it has begun converting its local phone network to packet-based switching technology made by Brampton, Ontario-based Nortel Networks Ltd. But the rollout schedule has been extended. The original plan called for the implementation to take eight years. Sprint now expects it to take up to 12 years.

3Com Says Q4 Sales Below Plan

3Com Corp. warned that it will report lower-than-expected revenue for its fourth quarter, which ended May 30. The Santa Clara, Calif.-based networking equipment vendor said revenue should range between \$165 million and \$175 million, well below its \$245 million third-quarter total. Enterprise networking sales will drop by as much as 25% sequentially, 3Com said.

Short Takes

THE APACHE SOFTWARE FOUNDATION released an update of its open-source Web server software that plugs a security hole in a module supporting the World Wide Web Distributed Authoring and Versioning protocol. ... DEUTSCHE LUFTHANSA AG said it will uplift The Boeing Co.'s wireless internet access technology on 90 long-haul jets.

New CIO Takes Reins Of IRS Tech Upgrade

Agency appoints former CFO to post as 10-year modernization effort continues

BY TODD H. WEISS

THE U.S. Internal Revenue Service has named W. Todd Grams, its former chief financial officer, to serve as new CIO, effective yesterday.

IRS Commissioner Mark W. Everson appointed Grams late last month to oversee the agency's continuing technology modernization, including the replacement of a decades-old master file system. Grams

had been the agency's CFO since February 2001. The IRS has been pursuing a major technology revamp since 1998 as part of a 10-year project authorized by Congress through its

IRS Restructuring and Reform Act. According to a recent report from the General Accounting Office (GAO), the act aims to fix problems with computer systems that didn't work and telephone systems that often left

taxpayers unable to reach workers at the agency.

In the past five years, Congress provided \$1.35 billion for the agency's Business Systems Modernization Project, which has resulted in improvements that have made it easier for taxpayers to reach the agency for assistance, according to the GAO report.

E-filing Expansion

A key benefit of the technology upgrades has been the expansion of electronic tax return filings, up from 12 million returns in 1995 to 53 million this year. Electronic filing helps the agency cut costs by

reducing the need for labor-intensive reviews of paper tax returns, according to the GAO.

One problem the new CIO will face is the continuing need for improved data and network security at the IRS, according to the GAO report. "Although IRS has made important progress securing its systems, information security remains a challenge," the GAO report stated. "Long-standing computer control weaknesses continue to threaten the confidentiality, integrity and availability of sensitive systems and taxpayer data."

Grams replaces John C. Reece, who retired last month after serving as CIO since February 2001. Before joining the IRS, Grams worked for more than 20 years at the Department of Veterans Affairs and the Office of Management and Budget. He couldn't be reached for comment. ▀

GOVERNMENT IT

Continued from page 1

Data Privacy

regard to data privacy. We are trying to make sure we have a law that meets their minimum requirements," Karnik said.

At the same time, a tougher data privacy law in India stands to benefit U.S. companies that have hired Indian firms to process jobs involving personal data.

"We see this as making it easier for us to do business there," said Karen Allen, vice president of risk management at Exalt Inc., a business process

outsourcer for Fortune 500 companies that last week opened a data center in Mumbai. The company is one in a growing number of U.S. corporations that process personal information on U.S. individuals at offshore locations. Such information often includes Social Security and driver's license numbers as well as confidential data such as individuals' employment or medical histories.

Currently there are no U.S. laws that prohibit that data from being shipped to or accessed from other countries. But companies are increasingly being required to comply with industry-specific and state laws such as the Health Information Portability and Accountability Act, the Gramm-Leach-Bliley Act and California's pending SB 1386, which goes into effect July 1. Has made privacy standards at Mercury "very significantly different from even a year ago," Scheuman said. India's initiative is therefore a positive one for Mercury, which outsources some development and maintenance work there, he said.

Companies need to ascertain what measures an offshore service provider has taken to ensure data privacy, Scheuman added. That means reviewing the providers' data handling and access control policies, disaster recovery and business continuity processes,

partner at law firm Alston & Bird LLP in Washington.

Consequently, it's important for companies to consider a country's data privacy laws when contracting with offshore firms, said Greg Scheuman, chief technology officer at Mercury Insurance Group in Brea, Calif.

The need to comply with Gramm-Leach-Bliley and California's SB 1386, which goes into effect July 1, has made privacy standards at Mercury "very significantly different from even a year ago," Scheuman said. India's initiative is therefore a positive one for Mercury, which outsources some development and maintenance work there, he said.

Companies need to ascertain what measures an offshore service provider has taken to ensure data privacy, Scheuman added. That means reviewing the providers' data handling and access control policies, disaster recovery and business continuity processes,

and employee screening practices, he said.

It also pays to familiarize employees in offshore locations with U.S. data privacy practices and laws, Allen said.

“We see this as making it easier for us to do business [in India].”

KAREN ALLEN,
VICE PRESIDENT OF RISK
MANAGEMENT EXALT INC.

Exalt, for instance, has a data privacy certification program for offshore employees. The company also ensures that no confidential data is sent overseas. Instead, the data is hosted on U.S.-based systems and accessed in a closely monitored region. Systems that are used to access the data have some functions disabled to prevent unauthorized copying or downloading of the data, Allen said.

"The focus of a U.S.-based company should be to look closely at the terms of their contract with outsourcing and insist that terms be imposed for very strong control over personal information," said Donald Harris, president of ITR Privacy Solutions Ltd., a New York-based identity management consultancy. ▀

CHECKLIST

Offshore Privacy

privacy experts
have in this context

regulate a framework
with applicable privacy laws

that proper data handling and access control measures are in place

that adequate security and business continuity measures are in place to protect data

BRIEFS

CSC Signs Two Outsourcing Deals

Computer Sciences Corp. (CSC) announced a pair of big IT outsourcing deals, including a 10-year, \$720 million contract with Maroon Corp., a London-based telecommunications equipment maker. El Segundo, Calif.-based CSC said it has also signed an outsourcing deal valued at \$450 million over 10 years with ISS A/S, a Copenhagen-based company that provides facility cleaning and landscaping services.

Sprint Slows Down Network Rollout

Sprint Corp. said it has begun converting its local phone network to packet-based switching technology made by Brampton, Ontario-based Nortel Networks Ltd. But the rollout schedule has been extended. The original plan called for the implementation to take eight years. Sprint now expects it to take up to 12 years.

3Com Says Q4 Sales Below Plan

3Com Corp. warned that it will report lower-than-expected revenue for its fourth quarter, which ended May 30. The Santa Clara, Calif.-based networking equipment vendor said revenue should range between \$185 million and \$175 million, will below its \$245 million third-quarter total. Enterprise networking sales will drop by as much as 25% sequentially, 3Com said.

Short Takes

THE APACHE SOFTWARE FOUNDATION released an update of its open-source Web server software that plugs a security hole in a module supporting the World Wide Web Distributed Authoring and Versioning protocol. . . . DEUTSCHE LUFTHANSA AG said it will install The Boeing Co.'s wireless Internet access technology on 80 long-haul jets.

New CIO Takes Reins Of IRS Tech Upgrade

Agency appoints former CFO to post as 10-year modernization effort continues

BY TODD R. WEISS

THE U.S. Internal Revenue Service has named W. Todd Grams, its former chief financial officer, to serve as new CIO, effective yesterday.

IRS Commissioner Mark W. Everson appointed Grams late last month to oversee the agency's continuing technology modernization, including the replacement of a decades-old master file system. Grams

had been the agency's CFO since February 2001. The IRS has been pursuing a major technology revamp since 1998 as part of a 10-year project authorized by Congress through the

IRS Restructuring and Reform Act. According

to a recent report from the General Accounting Office (GAO), the act aims to fix problems with computer systems that didn't work and telephone systems that often left

taxpayers unable to reach workers at the agency.

In the past five years, Congress provided \$1.35 billion for the agency's Business Systems Modernization Project, which has resulted in improvements that have made it easier for taxpayers to reach the agency for assistance, according to the GAO report.

E-filing Expansion

A key benefit of the technology upgrades has been the expansion of electronic tax return filings, up from 12 million returns in 1995 to 53 million this year. Electronic filing helps the agency cut costs by

reducing the need for labor-intensive reviews of paper tax returns, according to the GAO.

One problem the new CIO will face is the continuing need for improved data and network security at the IRS, according to the GAO report.

"Although IRS has made important progress securing its systems, information security remains a challenge," the GAO report stated. "Long-standing computer control weaknesses continue to threaten the confidentiality, integrity and availability of sensitive systems and taxpayer data."

Grams replaced John C. Reese, who retired last month after serving as CIO since February 2001. Before joining the IRS, Grams worked for more than 20 years at the Department of Veterans Affairs and the Office of Management and Budget. He couldn't be reached for comment. ▀

Continued from page 1

Data Privacy

regard to data privacy. We are trying to make sure we have a law that meets their minimum requirements," Karnik said.

At the same time, a tougher data privacy law in India stands to benefit U.S. companies that have hired Indian firms to process jobs involving personal data.

"We see this as making it easier for us to do business there," said Karen Allen, vice president of risk management at Exalt Inc., a business process

outsourcer for Fortune 500 companies that last week opened a data center in Mumbai. The company is one in a growing number of U.S. corporations that process personal information on U.S. individuals at offshore locations. Such information often includes Social Security and driver's license numbers as well as confidential data such as individuals' employment or medical histories.

Currently there are no U.S. laws that prohibit that data from being shipped to or accessed from other countries. But companies are increasingly being required to comply with industry-specific and state laws such as the Health Insurance Portability and Accountability Act, the Gramm-Leach-Bliley Act and California's pending SB 1386 identity-protection law. U.S. companies must comply with those laws regardless of where the data is processed or stored, legal experts said.

"There are no significant differences [in] a company's privacy obligations, [whether it's] conducting an offshore arrangement [or] a domestic one," said Christopher Ford, a

partner at law firm Alston & Bird LLP in Washington.

Consequently, it's important for companies to consider a country's data privacy laws when contracting with offshore firms, said

Greg Scheuman, chief technology officer at Mercury Insurance Group in Ithaca, Calif.

The need to comply with Gramm-Leach-Bliley and California's SB 1386, which goes into effect July 1, has made privacy standards at Mercury "very significantly different from even a year ago," Scheuman said. India's initiative is therefore a positive one for Mercury, which outsources some development and maintenance work there, he said.

Companies need to ascertain what measures an offshore service provider has taken to ensure data privacy, Scheuman added. That means reviewing the providers' data handling and access control policies, disaster recovery and business continuity processes,

and employee screening practices, he said.

It also pays to familiarize employees in offshore locations with U.S. data privacy practices and laws, Allen said.

Exalt, for instance, has a data privacy certification program for offshore employees. The company also ensures that no confidential data is sent overseas.

Instead, the data is hosted on U.S.-based systems

and accessed in a closely monitored process. Systems that are used to access the data have some functions disabled to prevent unauthorized copying or downloading of the data, Allen said.

"The focus of a U.S.-based company should be to look closely at the terms of their contract with outsourcing and insist that terms be imposed for very strong control over personal information," said Donald Harris, president of HR Privacy Solutions Ltd., a New York-based identity management consultancy. ▀

CHECKLIST

Offshore Privacy

When considering an offshore arrangement, companies should:

- Review the provider's privacy policy and ensure it meets U.S. requirements.
- Verify the provider's data handling and access control policies.
- Ensure the provider has adequate disaster recovery and business continuity plans.
- Confirm the provider's employee screening practices.
- Familiarize offshore employees with U.S. data privacy practices and laws.
- Host data on U.S.-based systems.
- Implement a closely monitored access process.
- Disable functions that could allow unauthorized copying or downloading of data.
- Insist on strong control over personal information in contracts.

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Continued from page 1

Microsoft

tomer, who asked not to be identified.

Bill Landefeld, vice president of worldwide licensing and pricing at Microsoft, said the additional benefits brought to Software Assurance are the direct result of feedback the company has collected from more than 2,000 customers during the past year.

Several IT managers last week said they expect the enhancements to be useful for their companies — especially the free access to online training modules, business-hour telephone and Web support for enterprise edition server software, and home-use rights to the same version of Microsoft Office that employees have at work. Benefits vary depending on the type of agreement purchased.

"It was a nice surprise — Christmas in May," said Les McCarter, director of infrastructure and operations at Hawaiian Electric Co. in Honolulu, which is eligible for the full complement of new benefits as an Enterprise Agreement licensee of Microsoft desktop and server products.

McCarter said the utility has paid for 100 to 200 work-at-home licenses in the past

and is currently exploring a virtual private network product that was going to require the purchase of licenses for home users. "This will mean a nice cost savings for us," he said.

But it's too soon to tell whether the enhancements unveiled last week will sway more companies to buy Software Assurance or entice those with existing agreements to renew. Until now, the prime decision-making factor has been the frequency with which a company upgrades.

Not for Everyone

Jim Prevost, CIO at Green Mountain Coffee Inc. in Waterbury, Vt., said the new benefits are good, but they won't change his decision to forgo Software Assurance because it's "just not worth the money." He said his company balked at purchasing Software Assurance because it was too expensive and he didn't want to feel pressured to upgrade more frequently than he would like.

David Curran, manager of IT at CE Franklin Ltd. in Calgary, Alberta, said his company doesn't upgrade quickly enough for Software Assurance to be of much value. But he said he might have considered it for server products to gain access to the free training and support, if the new benefits had been offered sooner.

Kurt Schlegel, an analyst at Meta Group Inc. in Stamford, Conn., predicted that free support will lead more companies to buy Software Assurance for their servers. He added that the economics are attractive for users with upgrade cycles under four years.

But Alvin Park, an analyst at Gartner Inc., said the value won't be obvious for every company. He said users will need to take stock of each new benefit Microsoft is building into Software Assurance and put a price tag on those benefits to determine whether it makes sense for them.

One Software Assurance customer who also holds a Premier Support contract with Microsoft said he hopes the new support options being offered through Software Assurance will enable his company to reduce the number of Premier Support hours it now purchases from the vendor. The customer, who asked not to be named, is the vice president of IT procurement at a multinational media conglomerate. He said the company spends more than \$100,000 per year on Premier Support.

He added that the company hasn't done an analysis to see if Software Assurance has been worth it and hasn't decided whether it will be renewed. With the economy

Software Assurance Benefits



forcing the company to watch costs, it couldn't upgrade even if it wanted to, he said.

For Joe Brunner, MIS manager at Sleepseek Printing Co. in Bellwood, Ill., the self-paced online training for users is expected to be particularly helpful, since Sleepseek's IT staff is small. "This is a tool I can give them that doesn't take away from my time," he said, "it's available when they need it."

Dwight Davis, an analyst at Boston-based Summit Strategies Inc., said Microsoft was forced to look beyond the pure software angle to enhance Software Assurance

because of the lengthening time between major product releases. He said customers have been paying for Software Assurance on "blind faith," without any assurances of the upgrades they will get during their contract terms.

"Microsoft should think long and hard about its release cycle for its software and try and build a little more predictability into its update cycle," Davis said. "If people knew they would get releases in the next two to three years, they would probably enter into those contracts more easily and with a lot less trepidation." ■

Software Assurance Changes Explained



Microsoft said last week that expanded training, support and management benefits will be available as of September for companies that purchased Software Assurance agreements for upgrade rights to its products. Bill Landefeld, vice president of worldwide licensing and pricing at Microsoft, spoke with Computerworld's Carol Shaw about the additional benefits. Excerpts from that interview follow.

Under the Software Assurance program, customers pay an annual fee for upgrade rights to Microsoft products, but the upgrade cycle has been somewhat slow for some products. Did that put pressure on you to add value to Software Assurance? There's always pressure on us to deliver for our customers. Did the rate of the upgrade cycle put more or less pressure on us? I would say more. . . Really, what this is in response to is customer feedback about the Licensing 6.0 rollout. In terms of what most they expect from a vendor like Microsoft through a Software Assurance type of program.

When you went out and talked to customers, did you ask them how they would like to use Software Assurance enhanced? We work closely with our research group, and we did a number of in-person surveys, a number of phone surveys and a number of Web surveys. It was quite comprehensive. And the surveys were different, based on the amount of time and the type of interaction we had.

We asked our customers what they expect from a relationship with Microsoft, what they expect from a maintenance type of offering like Software Assurance. And we would give them some exam-

ples of benefits that could be delivered. But we tried to go about it in a more open-ended way so that we could get real feedback on what was valuable to customers, as opposed to saying, "OK, here's a choice of three things. How would you prioritize this?"

If customers want to take advantage of any of the new benefits prior to Sept. 1, will they be able to negotiate to split assets to their owners? We've always working with our customers on a one-on-one basis, and what I would tell our customers is, talk to your channel partner or your Microsoft account manager. We aim to make sure that customers can take advantage of these benefits

in the September time frame, but any specific customer questions should be directed to their channel partner or their account manager.

Licensing 6.0 has been out for a while. When is Licensing 7.0 due out? One thing that we've heard very clearly from our customers is that if we change anything, they want plenty of notice. The other is that they've had enough change for a while. So we have no plans for a version of licensing beyond Licensing 6.0.

MAKE IT ONLINE

To see the complete interview with Landefeld, visit our Web site.

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European Agency Gets OK For GPS-like Satellite System

Galileo to begin launching in 2006

BY BOB BREWIN

The European Space Agency (ESA) last week said its 15 member states have reached an agreement that paves the way for the development of a satellite-based navigation system designed to rival the U.S.-developed Global Positioning System (GPS) technology.

The agreement came just two weeks before the scheduled start of an international communications conference at which the frequencies to be

used by the European system are expected to be decided.

The ESA said it's now ready to sign a joint development deal for the proposed Galileo system with the European Union, which will split the cost. The project's budget is expected to total \$3.7 billion, according to Dominique Detrain, an ESA spokesman in Paris.

The ESA plans to launch the first of 27 active Galileo satellites and three spares in 2006 and complete the deployment two years later.

Because Galileo will likely transmit its signals within the

same frequency band used by GPS equipment, users should eventually be able to buy receivers that can pick up location signals from both systems, said Ashok Wadwani, president of Applied Field Data Systems Inc., a GPS consulting firm in Houston.

The mixed support could provide better data availability and improved location accuracy. For example, Ken Chamberlain, a land surveyor at the Bureau of Land Management in Portland, Ore., said Galileo should make it easier for agency users operating in dense tree cover to access

satellite location signals.

But before the ESA can proceed, it must first obtain rights to the needed frequencies at the World Radiocommunication Conference (WRC-03), which starts next week in Geneva. The conference is being held under the auspices of the International Telecommunication Union, a United Nations agency with more than 180 member states.

Restrictive Language

The U.S. government, in its draft proposals for WRC-03, inserted language that the ESA and EU view as threatening to Galileo. That language would set specific milestones for new satellite navigation systems to reach before frequencies could be assigned to them, including "clear and binding agreements for the

manufacture and procurement of satellites."

John Alden, a spokesman for a WRC-03 delegation that will be led by the U.S. State Department, said the proposed language is designed solely to weed out "paper" satellite systems that are speculative or that could be used to tie up spectrum resources without ever being built. The U.S. has told European officials that it considers Galileo to be a viable system and that it isn't trying to impede its development, Alden said.

But Joern Tjaden, head of the Galileo interim support office in Brussels, said the U.S. draft language is one reason the ESA plans to launch the first of the Galileo satellites in 2006. By doing so, he said, the agency would meet the criteria proposed by the U.S. ■

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*Tests by Dell in January 2003 on identical hardware. Dell configuration: Dell PowerEdge 6650 server with four 2.0 GHz Intel Xeon MP processors, 16 GB RAM, 160 GB hard drive, 1000 W power supply, 1000 W Dell PowerEdge 6650 server with four 2.0 GHz Intel Xeon MP processors, 16 GB RAM, 160 GB hard drive, 1000 W Dell PowerEdge 6650 server with four 2.0 GHz Intel Xeon MP processors. Sun configuration: Sun Fire V480 server with four 900 MHz UltraSPARC II processors, 16 GB RAM, 160 GB hard drive, 1000 W power supply, 1000 W Dell PowerEdge 6650 server with four 2.0 GHz Intel Xeon MP processors. For details and results, see www.dell.com/migration.

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Nasdaq's CIO Looks to Streamline Systems

Stock market plans shift from Unix to Linux

BY LUCAS MEARIAN

In an effort to whittle down the number of IT platforms it needs to support, The Nasdaq Stock Market Inc. is looking to consolidate servers and networks through a series of moves that will include shifting some applications from Unix servers to Linux boxes.

In an interview last month, Nasdaq CIO Steve Randich said he also wants to eliminate the company's Unisys Corp. mainframes and migrate the trading-floor functions that run on those machines to its year-old SuperMontage order display and execution system. SuperMontage is based on a combination of fault-tolerant systems made by Hewlett-Packard Co. and Stratus Technologies Inc., plus Dell Computer Corp. Windows servers.

In addition, New York-based Nasdaq is consolidating 15 market data, stock trading and corporate e-mail networks onto a single IP-based WAN backbone. That project will cost \$50 million, Randich said.

Nasdaq currently uses about 300 Unix servers that run a mix of HP's Tru64 and HP-UX operating systems as well as Sun Solaris. Randich declined to specify how many of those servers he expects to replace with Linux systems or say when conversions to the open-source software will take place. But he added that Linux will be his first choice for migrations, despite the existing use of Wintel systems inside Nasdaq.

"Going from Linux to Unix tends to be the most compatible and easiest decision," Randich said. "I don't want to bifurcate myself across Linux and Windows Server 2003. But I do think Linux will play a role at Nasdaq in helping us minimize our Unix platforms going forward."

The network consolidation project is under way, but Randich declined to discuss a rollout schedule. Nasdaq's 15 networks are all run by WorldCom Inc., which now operates under the name MCI. Randich said the stock market has yet to pick a services



Steve Randich, Nasdaq's CIO, says the company is looking to migrate some of its Unix servers to Linux.

provider for the unified Nasdaq Intelligent Network, which will be built around Cisco Systems Inc. routers that support the Multiprotocol Label Switching standard.

Despite the heavy investment in networking hardware and software that the new network will require, Randich expects to get a rapid return on investment. "It will require some recouping, but more importantly, we're going to be able to take a lot of circuits out of our network and save costs," he said.

On-demand Computing

Another likely cost saver is a plan to move toward more of an on-demand computing approach that would let Nasdaq add server or storage capacity as needed. Randich said he has been putting pressure on his hardware vendors to support on-demand computing and is seeing "more and more willingness" on their part to do so.

But Jamie Gruener, an analyst at The Yankee Group in Boston, said some vendors are struggling to create policy-based software that can automatically order additional equipment for users or turn on unused servers and storage devices when specified capacity thresholds are reached. "We're not there yet and may not be for some time," Gruener said. ■

SAP, MySQL Sign Open-Source Database Deal

BY MARC L. BONOMO

SAP AG last week said it plans to hand off lead development of its SAP DB database software to MySQL AB and work with MySQL to deliver an enterprise-class version of that company's namesake open-source database.

SAP officials said the agreement with MySQL is an attempt to put increased development muscle behind the open-source movement and make it easier for corporate users to deploy Linux-based ERP systems without having to pay big database administration fees.

SAP includes SAP DB with its applications as a free alternative to Oracle, DB2 and SQL Server databases, and it released an open-source version of the technology in late 2000. The business applications vendor said SAP DB is being used by about 1,000 customers.

Now MySQL will take over stewardship of the product, said Fahem Ahmed, director of market strategy and collaborative solutions at SAP. That means MySQL's development and management tools will be able to work with SAP DB, which should help cut the cost of administering the database for users, Ahmed said.

Continued Existence, Support

SAP will continue to support SAP DB installations, for both existing and new customers. MySQL CEO Marten Mickos said his company is taking over the lead role on tasks such as developing new application programming interfaces and testing SAP DB to ensure that it continues to conform to industry standards. SAP DB will still be offered "for a long time," Mickos said.

But he added that Uppsala, Sweden-based MySQL will start marketing the software under its own name by the fourth quarter and offer a version under a commercial license in addition to the free release. The agreement will also let the company add corporate-

oriented technologies in SAP DB to its MySQL database, with the goal of slashing the time it would take MySQL to develop those features on its own.

The agreement with MySQL appears to have the potential to enrich the capabilities of SAP DB, said Charlie Brann, SAP administrator at Swisslog TransLogic Corp. in Denver, Swisslog, which makes materials-handling systems, runs SAP DB with SAP's flagship R/3 applications. Brann said the upcoming changes should also open up SAP DB to management tools beyond what SAP currently provides.

PeopleSoft Inc. last month announced plans to make all of its business applications available on Red Hat Linux [QuickLink 38335].

But SAP is now putting itself ahead of PeopleSoft and other rivals in terms of open-source support, said Stacey Quandt, an analyst at Forrester Research Inc. in Cambridge, Mass. The agreement with MySQL should also give SAP users more choices when they pick databases to support their ERP applications, she said. ■

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MARYFRAN JOHNSON

Sarbanes Action Plan

IMAGINE ASKING 40 CIOs in six cities what their biggest worries are these days. I'd expect to hear about freeze-dried IT budgets, unfinished projects, sinking staff morale or loss of corporate confidence.

It'd be way off base.

What I never would have guessed was the Sarbanes-Oxley Act of 2002, that Loch Ness monster of new financial reporting and disclosure requirements enacted by Congress in the aftermath of Enron and a string of other corporate scandals. Nobody quite knows how far-reaching its impact on IT infrastructures will be, but ignorance is the opposite of bliss here.

"The CIOs feel blindsided by this," says Cathy Hotka, principal of Cathy Hotka & Associates and former VP of IT at the National Retail Federation. In a recent series of CIO roundtables she moderated, Hotka was surprised to find SOX (as the finance types call the act) a topic of so much consternation among senior IT execs. "They know the CFOs have it on their radar screens, and they don't like that feeling. Nobody has a handle on this yet," she says.

Sarbanes-Oxley is reverberating throughout IT management like an eerie echo of Y2K, with compliance deadlines looming and businesses feeling threatened and uncertain about the extent of the potential damage (that is, legal trouble) if changes aren't made. As one of Hotka's CIO dinner guests observed, "I could end up spending \$1 million to fix a \$100,000 problem!"

"There's a tremendous amount of confusion" about what IT should be doing to ensure compliance with Sarbanes-Oxley, says John Hagerty, an analyst at AMR Research Inc. in Boston. A recent AMR poll of 60 companies found that while 89% are anticipating changes in system and

application infrastructures, an equally whopping 80% are unsure of what the changes will be.

In light of all this free-floating anxiety, last week's news that the Securities and Exchange Commission had extended the deadline for Sarbanes-Oxley compliance another nine months (to June 2004) might seem like a welcome relief.

But senior IT managers should be using this gift of time to get their information engines in gear — not to relax.

Step 1: Dive in and do some research. Online in our IT Management Knowledge Center, we've compiled a special topics page [QuickLink 34250] with all of our ongoing coverage of Sarbanes-Oxley and additional links to sister publication CIO magazine's recent series on legislative issues. We'll keep

adding resources to that page, so let us know what kind of additional information you need. If you search on Google for "Sarbanes-Oxley and CIOs," you'll get more than 700 hits. Many are worth looking over for advice, checklists, additional resources and examples of what other companies are doing.

Step 2: Survey the vendor landscape. A number of them are offering their wagons and offering upgraded products or new features geared to tracking, safeguarding or guaranteeing data veracity. So far, the vendors include Oracle, Hyperion, SAS Institute and PeopleSoft, and there are also several vendors of reporting tools, supply chain software and document management applications with offerings.

Step 3: Formulate an action plan that includes a presentation to the CFO about the proactive measures IT is looking into (or, even better, ready to implement) to address a range of Sarbanes-related concerns: internal auditing and controls, systems access, real-time data reporting, detailed IT project tracking and so forth. [More action items are online at QuickLink 34225.]

Like it or not, IT will be at the heart of your company's Sarbanes solution. And if you're ready and informed, you'll be at the head of it. ■



PIMM FOX

Goldfinger's Heirs

ICAN SEE the movie trailer now: Pierce Brosnan as Agent 007 uncovers a secret slush fund that's being used to bribe world leaders and business execs so that they'll eschew Linux in favor of Windows — software they don't want. Behind the scenes, Bill Gates (played by Mike Myers) secretly hands out piles of cash to greedy governments and corporate bigwigs, while his hairless cat Orlando plots to destroy Linux user groups by listening in on their meetings and trade shows.

This might read like a Hollywood script gone sour. It not for a series of Microsoft deeds, beginning with a memo written last summer by a former Microsoft official named Orlando Ayalá, then the head of worldwide sales. His missive put forth a corporate strategy to persuade governments not to forsake Windows for Linux. If deals were in jeopardy, Microsoft reps were to draw from a special slush fund to either discount or make Windows software available for free. "Under NO circumstances lose against Linux," Ayalá wrote.

A rogue e-mail by some excited, hyped-up exec? No way. Steve Ballmer, Microsoft's big cheese, got a copy.

This may be legal and standard operating procedure for a monopolist here at home, but in Europe regulators are still investigating whether Microsoft broke antitrust laws.

According to a follow-up message from Michael Sinner, Microsoft's executive for services, the fund had \$180 million earmarked for discounting in 2003. Aboveboard in the U.S., perhaps, but in Microsoft's case it's just plain wrong.

The 2001 settlement with the Bush administration has been about as effective in forcing Microsoft to drop its heavy-handed, anticompetitive moves as Iraq's air force in stopping Operation Iraqi Freedom.

But there is some hope. The combination of Linux and people's general





Five Technologies that Will Make a Difference

A Storage Manager's Watch List



OPEN

The

VERITAS

Five Technologies that Will Make a Difference

A Storage Manager's Watch List

Written by: Richard Villars, Vice President, Storage Systems Research, IDC

Global economic and business uncertainties place a growing strain on IT systems and the people who install and maintain them. Despite tightening budgets, customers and, in many cases, regulatory agencies demand better, faster and more cost-effective access to information. In today's information-based economy, these demands translate into enhancing the value of existing and planned IT investments while simultaneously reducing the cost of IT operations.

One roadblock is the difficulty companies have managing storage assets. Enterprises must collect and store more information (e.g., medical records, customer correspondence and e-commerce transactions). They must also enhance existing applications; deploy new ones, and integrate rich content (e.g., audio, image and video files) into existing solutions.

The bottom line: a need for more storage capacity. In these challenging times, simply going out and buying more storage is not acceptable. For today's CFO and IT manager, price per gigabyte and useful capacity — not just raw gigabytes — are at least as important as performance for many

applications. This cost-consciousness translates into three requirements:

- Increase flexibility in purchasing and extending storage capacity.
- Improve utilization by consolidating and maximizing capacity.
- Reduce ongoing storage, server and application configuration costs of resources and time to complete.

The world is awash in technology that promises to lower the total cost of ownership and improve ROI. Some very visible technologies specifically target companies' storage priorities.

But what is real? What technologies can you implement today to impact the corporate bottom line? In this White Paper, we look at five

technologies that should be closely watched by storage managers, data center managers and CIOs.

By mid-2004, these storage-related technologies will reduce the cost per gigabyte of real storage capacity, the complexity of organizing and protecting data within storage systems, and the cost of provisioning and managing add-on capacity. Each can help reduce the cost of adding storage capacity or managing existing assets. Their real value, however, is in new products and services that offer previously unseen integrated solutions.



Since the development of the SCSI interface, most servers (other than low-end Intel-based servers with internal drives) relied on enterprise-class (SCSI) hard disk drives for local storage. Higher performance and reliability requirements made the Advanced Technology Attachment (ATA) drives (desktop-class drives) developed for PCs insufficient for enterprise applications. As a result, SCSI drives commanded a 300% price premium over similar capacity ATA drives. Today, virtually all storage op-

tems use enterprise class SCSI drives or even more expensive Fibre Channel interfaces.

The price differential is not unjustified. SCSI and Fibre Channel drives have seen markedly increased performance levels in resistance to vibration and error correction. Reliability is more than twice as high for SCSI drives as for similar capacity ATA drives, and testing regimens are more intense for enterprise class drives than they are for desktop class drives.

However, high performance systems and mission critical applications account for a small portion of the overall storage workload in most organizations. Recent IDC interviews with 900 U.S. IT managers found that collaborative applications (including email) and basic services such as file sharing and Web services are the fastest growing consumers of IT spending for new servers and storage systems (Figure 1).

These application workloads are primarily Intel-based servers running Windows or Linux. They're over-served in terms of performance and reliability (but not capacity) by SCSI drive-based arrays. Cost-conscious IT managers seek drive technologies that satisfy less strenuous performance metrics at lower cost.

The introduction of serial ATA (SATA) interface for ATA, improvement in component performance and reliability in ATA drives, and the capacity advantage over enterprise-class drives are advancing desktop-class mechanisms to a point where solution providers must consider their integration into storage systems.

Recognizing SCSI's limitations,

the SCSI Trade Association developed a recently approved interconnect standard, Serial Attached SCSI (SAS). SAS promises to boost SCSI interconnect performance while maintaining, or even reducing, cost. In a positive move for customers and storage suppliers, SATA and SAS developers agreed in 2002 to employ a standard interconnect across both technologies. SAS silicon will control both drives, helping enterprises deploy the mix of drive mechanisms while leveraging common elements such as enclosures and controllers.

Low-cost arrays

The most obvious offering is a standard array product that uses large capacity SATA drives instead of enterprise class SCSI drives. Such a system will deliver greater capacity at a much lower price but won't deliver comparable performance or reliability IT managers at small and medium

size businesses, and those at larger enterprises deploying low-end servers, should consider SATA solutions.

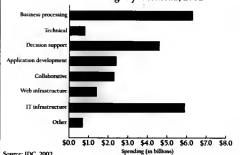
Don't expect to see entry level SATA products before late 2003. Integrating SATA drives into existing environments and completing product certification will take time. This means standard storage systems with SATA drives won't deliver the full cost benefits of desktop-class drives, though savings will be significant.

Businesses with extensive investments in storage assets should keep an eye on another SATA deployment option. Within 18 months, major vendors will announce or deliver upgrades to existing mid-range products that will enable them to support different interconnects (Fibre Channel, SCSI, SAS and SATA).

Disk-based backup and recovery

One SATA-based development that bears close watching is the disk

Figure 1
Worldwide spending on internal and external storage by workload, 2002



based backup solution as an enhancement to existing tape systems.

The widespread use of tape for backup and recovery is based on two value propositions: cost and portability. Potential weaknesses include slow recovery times, an inability to provide simple access for small randomly located amounts of data and potential downtime.

Disk-based storage systems — essentially near-line storage servers — are faster than tape when servicing frequent restores of small amounts of data. They also provide the level of functionality and ease-of-use required by enterprise users.

Existing data replication and backup systems, whether based on tape or expensive disks, provide time-based restore. IT managers can only recover to the system state at the time that the backup was performed. Lower-priced disk-based storage will offer continuous versioning by leveraging new software tools, rapid access speeds and disk availability to offer event-based restore (recovery at virtually any point in time).

Several vendors are already delivering near-line storage solutions based on less capable parallel ATA technology at a price per gigabyte that is often one-third the cost of their other product offerings. And soon, IT managers should look for many tape and optical-based backup-and-recovery providers to integrate near-line storage products and functions into existing solutions. Don't expect these systems to replace existing tape solutions, rather, look for solutions that leverage low-cost disk technology to address local and



remote data and disaster recovery requirements more cost-effectively



Fibre Channel is the predominant interconnect standard today for storage-area networks (SANs). It offers high performance and reliability, enjoys broad industry support, and is a critical element in enterprise efforts to improve storage capacity utilization and remove servers as a bottleneck in data backup and recovery. In 2002, companies across the globe spent \$2.4 billion on Fibre Channel SAN switches and host bus adapters (HBAs) for servers and tape systems.

The trouble with Fibre Channel solutions (especially for medium-size and small businesses) is the initial cost to connect servers and storage systems. The cost of a Fibre Channel HBA for an Intel-based server can range from 20% to 50% of the cost of the server itself. Even large enterprises have trouble justifying the use of Fibre Channel SANs for their low-end servers, especially at remote sites.

As a result, in 2002, SAN attached storage arrays accounted for just 38.8% of all array sales in Western Europe. The rest were either network-attached storage (NAS) files

or directly attached to the servers. The direct attachment of storage to servers remains the most significant contributor to poor disk utilization. With direct attached servers, IT managers cannot shift storage from a server using 20% of capacity to one exceeding 80%. In aggregate, utilization rates range from 25% to 50%, by comparison, in mainframe environments, utilization can top 80%.

One way to reduce SAN connectivity costs is to take advantage of existing widely deployed, low-cost technologies. Ethernet and TCP/IP. The result is the development of the iSCSI standard, which enables the connection of servers (initiators) and arrays (targets) via IP networks.

The most promising short-term use for iSCSI is as a gateway between IP networks and Fibre Channel-based backup systems. Many low-end servers in large enterprises are not attached to the corporate SAN, either because the connection is too expensive or the server is at a remote site. While everyone focuses on the disk utilization shortcomings of these "stranded" servers, they often overlook the wasteful necessity of deploying expensive, isolated tape backup systems — often inconsistently deployed and prone to high failure rates when a recovery is attempted.

The deployment of software to turn these stranded servers into iSCSI initiators allows them to use pre-installed features (an Ethernet card and an IP stack) and existing LAN- and WAN-based IP networks to forward data to higher performing, more cost-effective and more reliable SAN-based tape or (emerging) disk

based backup systems.

Companies, such as Cisco Systems Inc. and QLogic Corp., have already announced iSCSI to Fibre Channel gateways (iSCSI routers or bridges), and virtually all other major IP and Fibre Channel network equipment vendors will introduce competing products in the next 12 to 18 months.

Riding the SATA wave

The other major iSCSI opportunity is as a key supporting technology for several of the ATA-based solutions. Integrating SATA into low-end arrays and near-line storage promises to reduce the cost of storage for small and medium-size businesses. Much of this cost benefit is lost if IT managers deploy expensive Fibre Channel arrays, switches and HBAs. By employing SATA-based arrays with iSCSI interconnects, IT managers can take advantage of technologies that come pre-packaged with servers as well as inexpensive and well-understood Ethernet switches.

IDC recommends that IT managers evaluating iSCSI-capable storage systems deploy a physically separate Ethernet network rather than attempt to accommodate this new traffic type within an existing network. While this approach is modestly more costly, it avoids the security and network performance issues that can slow initial testing and deployment of such systems.

Virtualization remains one of the most hyped but least understood technology concepts in IT. Many ven-

Technology promises to lower TCO and improve ROI. But what is real?

dors have announced next-generation IT strategies based on the concept of "virtualizing" resources. Over the next 12 months, vendors will begin to deliver virtualization products.

What practical value can storage managers actually expect from these solutions? It comes down to two straightforward goals: improving the utilization of all existing storage assets (the long-term goal), and reducing the expense and time required to migrate data from one storage system to another, even across non-homogeneous systems (the short-term goal). Solutions that address these goals deliver enterprise-wide volume management and data replication.

Overcoming the limits of existing SANs

The popularity, diversity and size of SANs present IT managers with new manageability issues related to increasing numbers of pooled arrays, a growing variety of storage controllers, and disparate supporting software solutions for data migration and replication. This heterogeneity results in many isolated SANs, increasing cost and introducing additional management complexity.

Virtualization is a new approach to storage system design that introduces a layer of logical abstraction

between physical blocks of data on storage devices and the logical volumes of information that servers and applications require. The goal is to disassociate blocks of storage capacity—logical unit numbers (LUNs)—from specific volumes required by server applications, eliminating the need to continually manually reconfigure both server and storage connections when changes are made.

By leveraging controller functions for LUNs and volume management in a networked storage controller, IT managers can introduce a logical layer of abstraction between LUNs and volumes. That means IT can connect applications to specific virtual volumes without needing any knowledge of the underlying disk environment, even across heterogeneous systems. Moreover, IT can add capacity to virtual volumes without server reconfigurations.

The deployment of data replication functions and volume management within a networked storage controller leads to several significant improvements in the way IT approaches data protection and recovery. Replication will be performed at the logical volume level, making it possible to replicate volumes across heterogeneous storage arrays, rather than only on homogeneous systems.

IT can take advantage of installed systems or use lower-cost storage systems for near-line storage without sacrificing system integrity. Performing data replication functions on networked controllers provides a foundation for consistent data replication and recovery policies.

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Sifting through the choices

IT managers will soon be confronted with virtualization solutions from a variety of software, storage, networking and systems vendors. A second family of virtualization solutions, based on an appliance model, will hit the market shortly. Finally, there are blade-based virtualization systems that reside within the SAN switch, similar to appliances that move many storage management functions fully into the network.

Implementation is the key

The delivery of products for network-based volume management and data replication represents a significant change in traditional storage architecture and processes. Installing such systems won't guarantee better capacity utilization and reduced management costs. Effective implementation is a critical concern for these emerging solutions. IT managers need to establish rules and procedures for everything from naming conventions to provisioning and replication policies. They must then set up volume management and data replication systems.

Fixed Content Storage

For all organizations, stored data falls into three broad categories:

- Structural data, such as flat file transactional systems, business intelligence tools, and relational databases that typically support mission-critical business systems. High reliability, recoverability and performance are the critical features here.
- Fixed content, such as end-

Soon, storage vendors of all stripes will implement the SNIA's SMIS.

user office productivity files, email archives, audio, video and images. Unstructured data is stored in printed or analog form, on dispersed file servers or within relational databases as large binary objects.

- Archival data, such as backup copies of critical transaction data and select unstructured data for disaster recovery and long-term record keeping. Tape and optical systems are the preferred option for both local and remote storage of this data.

Fixed content applications are a new market in which companies' storage needs focus on different performance measures that are either over- or underserved by today's disk and tape solutions. While NAS may reduce some costs, it does nothing to resolve the problem with existing storage systems used today for fixed content: non-existent and/or ineffective organization and management.

Making storage content-aware

By mid-2004, a number of new storage-related technologies will begin to address the cost of provisioning and managing capacity. Capacity-oriented SATA mechanisms, virtualization and iSCSI promise to reduce cost and boost data mobility while maintaining performance levels that are more than satisfactory for fixed content.

Inexpensive capacity, improved data mobility and less costly connectivity solutions address only a part of the fragmentation and lack of organization that lead to lost data, wasted capacity and excess management costs. For enterprise IT, the key to cost-effective storage for fixed content will be software solutions that separate information about content from information about its physical location.

Content-aware storage (CAS) solutions, sold initially as integrated storage and software systems, will store data as objects, not simple files. CAS will require no knowledge of the storage environment or physical location of the objects (it will leverage underlying virtualization services to handle this issue). Each object has attributes, including a unique footprint, allowing data to be stored only once to service all requests.

Object-oriented data structures and distributed file system services implemented in CAS deliver improvements on several dimensions relative to traditional file-based systems. These include allowing for customized searching, adding verifiability (e.g., ensuring specific content has been unaltered) and eliminating the need for duplication. These attributes will significantly change the cost of fixed content disk-based storage for applications such as email and image archives.

CAS options

A number of software startups were early champions of content-aware storage solutions, but the most significant early participant has been



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IDC expects other major storage system suppliers to introduce CAS solutions in the next 12 months. Initial CAS implementations will work best if they target specific needs, such as email archiving or medical record storage.

Another important group of storage suppliers that will play a role in bringing CAS to small and medium-size businesses are current suppliers of backup and restore solutions. For these companies, CAS is a sustaining innovation, enabling significant enhancements in the reliability, speed and usefulness of existing backup/recovery solutions. Truly effective CAS solutions for small and medium-size businesses will take more time to come to market.

Standard-Based Storage

A recurring theme in each of the previous discussions is the interdependence of the solutions. IT managers can only reap the maximum benefits if these technologies work together. One impediment: the "certification crisis."

Customers understandably demand extensive testing of different combinations of arrays, tape systems, servers, operating systems and applications. In the days of direct attached storage and relatively homogenous environments, this requirement, while resource-intensive, was manageable for most vendors. But in today's world of diverse server platforms, operating systems, SAN infrastructure products and storage prod-

ucts, the testing required is growing exponentially.

Testing is now a major barrier to entry for storage startups. The time to roll out features and functions is stretching to more than six months for many products. Even the largest vendors find it hard to keep pace with testing needs. The result is reduced choices and less interoperability.

Learning to trust standards

The storage sector is not the first IT industry to face such a crisis. Networking was in a similar predicament in the 1980s. The adoption of standards for network connectivity significantly improved product interoperability while reducing the need to test every possible product combination.

The Storage Networking Industry Association (SNIA) has long championed the development of standard processes and protocols. The SNIA storage model helped define the logic behind many of today's new technologies, including virtualization and CAS. Another critical SNIA effort has encouraged interoperability testing and certification for storage solutions such as iSCSI.

SNIA's most important effort, however, is to drive the creation of the Storage Management Interface Specification (SMIS) for monitoring and managing all storage-related sys-

tems. Today's version, approved early this year, by no means represents the final iteration. Over the next six months, storage vendors of all stripes will begin to implement SMIS.

For the first time, IT managers will be able to collect and access common information for storage systems throughout the enterprise, regardless of which vendor supplied those systems. Such information is a powerful resource for monitoring interoperability, better managing storage capacity and limiting the impact of inevitable failures.

New versions of SMIS-capable management products will provide additional functions in the areas of auto-discovery, configuration and performance monitoring. When these standards arrive, IT managers will finally have the ability to automate repetitive storage configuration tasks and introduce more policy-driven management systems across diverse storage environments.

The ultimate success of the SMIS is in the hands of IT managers. SMIS and its brethren certainly won't solve all storage management woes on day one, but greater reliance on these standards will help reduce the level of certification testing needed. Only by insisting that suppliers use interoperability and management standards will IT ensure continued upgrades to these standards. ■



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disgust with the way Microsoft does business could thwart the company's ambitions in the server market.

And that threat is causing Microsoft to do some pretty bizarre things.

Microsoft employees have been hiding their identities as they impersonate independent computer consultants and OEM reps at trade shows in the U.S. to get information about competitors. Microsoft doesn't see anything amiss in these deeds.

And the company continues to argue that the slush fund will be used wherever it's needed.

It's great that Bill Gates wants to spend his millions improving health standards and supporting education around the world, but if his company continues to operate without any ethical standards, what kind of world is he helping to create?

As the saying goes: If you want to know what God thinks of money, just look at the people He gave it to. ▀

longer "tech advantage aggressively" but instead should "manage costs and risks meticulously." The article makes Bill Joy's "tech-world" speech look upbeat.

He is dead wrong on all counts. Of more concern, however, is the sad fact that many well-minded, vision-challenged business executives will use this as ammunition to further reduce the influence and impact that appropriately managed IT can have.

An off-labeled criticism against Harvard Business School is that it gets the part perfectly and is pretty close to correct on the present but still manages to flunk the future. This may have something to do with its fetishlike obsession with the case study method,

which by its very nature is an exercise in historical analysis.

What Carr doesn't seem to understand is that the future is all about the evolution and blurring of the interface between people and our machines. The environment we will live, work and play in will become inexorably more digital. The Darwinistic forces of information natural selection are just now beginning to exert themselves.

Our aptitude for information management will determine much of our lives. "Being digital" is the next step in the evolution of our species. Whether our endpoint is Digital Eden or High-tech Hades is very much up to us.

Carr overfocuses on the current pre-Edenic environment, a time when

machines are just machines — relatively simplistic, nonintelligent chunks of metal and silicon. When they break, we are screwed. When they work, we are victimized, pagers, for example, are little more than electronic leashes. But in Digital Eden — a place we will never see if we follow Carr's advice — the machines will work for us.

In closing, let me paraphrase yet another Harvard guy. Bobby Kennedy was deflating youth, but I will apply it to IT: "IT is not a menial task waiting to be outsourced, but a state of mind, a temper of will, a quality of imagination, a predominance of courage over timidity, of the appetite for adventure over the love of ease."

IT does matter. ▀

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THORNTON MAY

Harvard Flunks IT

HARVARD BUSINESS School has many successful graduates (our CEO in chief, George W. Bush, to name but one) and a proud history of IT scholarship. But I fear that the time has finally come to stick a fork in it as far as thought leadership in IT is concerned. All of us in the profession have, at least once during our careers, bowed reverentially to capitalism's Mecca on the Charles as we sought to merge the historically different and often non-convergent disciplines of technology and business management. No more.

Nicholas G. Carr, writing in the latest issue of the school's highly influential publication, the *Harvard Business Review*, has penned a neo-Luddite, could-have-been-written-by-the-Unabomber (another Harvard guy) antitechnology article, "IT Doesn't Matter." It pretty much tells IT leaders that they should pack their bags and go home. As I read the article, barely a sentence went by without me gasping.

We are told that IT is no longer strategic, that the now-and-future infrastructure is pretty much built out, that vendors are "rushing to position themselves as commodity suppliers" and that we should no

Carr Draws Fire: IT Remains Relevant

IF NICHOLAS G. CARR were called about the commoditization of IT (and the related lack of strategic value to business) ("Get Over Yourself," *QuickLink* 37990), every CEO would get the same answer to the question, "What is the cheapest IT solution?" Just as with electricity, companies' needs would vary only in quantity, not quality. However, those of us who have spent our careers in IT know that the answer to this question is always, "It depends." And what it depends upon, more than anything else, is a company's strategy.

Typically, competitive strategy lies toward one of two forms: being the lowest-cost provider of a commodity product or service, or being a value-added provider of a differentiated product or service. The variety and complexity of IT solutions are such that there is an almost infinite number of "correct" IT solutions and investment strategies for either of these competitive strategies; however, the set of solutions that works for one will not be the same as the set that works for the other. Thus, I think, nullify IT management, which reduces the selection, maintenance and deployment of new and ongoing IT capability, a key strategic issue.

Getting IT right is a difficult problem that many executives face, and while some will appreciate the offer

bullet Carr offers, most, I expect, will find his narrative discouraging. **Carly Hight**, IT consultant, San Francisco, carlyhight@usglobe.com. **Editor's note:** A longer version of this letter appears online at *QuickLink* 38708.

HISTORY TEACHES that technology is highly cyclical. It is simply absurd that anybody would believe that technology no longer provides a source of competitive advantage. It's never been the technology that creates advantage in the marketplace; it's how companies strategically implement their business processes around the technology. From the general tone of recent issues, *Computerworld*'s seems bent on punishing the IT profession for unspecified past sins. The truth is that our industry and profession are in the middle of a normal cyclical downturn. I wonder what you will publish when the tech sector rebounds and businesses return to giving long-term advantages from technology. **Steve Thurston**, IT director, Steve04@yahoo.com

NEWS FOR NASA: Put that plan for a manned mission to Mars in the trash can. Nicholas G. Carr is

already there! Carr's comments are so far removed from earthbound reality, he simply must be on a different planet. While his planet has apparently already explored the Internet to its maximum potential, developers still have on planet Earth are struggling to get Windows applications to talk to Unix servers. **Mike Watts**, Lead systems engineer, AJG American General, Neptune, N.J., michael_watts@ajg.com

NICHOLAS G. CARR does indeed have a point, in that IT technology has become something any company can own at the same level as its competitors. The only advantages in computers now are simply in automating faster, organizing information better, transmitting it faster and doing it all for less than your competition. Still, technology as a whole will keep evolving. New technology will appear, as the Web did in the '90s. These new technologies will create temporary barriers that will allow short-term strategic advantages. IT will also have a branch that will become the "third dog" of technology to help scout out these new avenues.

Just as economists attempt to determine financial advantages for companies, IT will do the same with technologies. As revolutionary as IT has been for quite a while, it will be the leading-off point for even more

word-of-mouth technology, just as electricity was the wonder technology that eventually led to computers. **John E. Columbus**, Owner, Columbus Consulting Group, New Hope, Minn.

ASKED to Patricia Kelle's rebuttal to Nicholas G. Carr ("IT Does Matter," *QuickLink* 38298). As a former IT manager doing CO-level work for a small company, I believe there is still plenty of room for the strategic use of technology. The tools may be commoditized, but the majority of companies for which those tools will be used are still learning how to take hold and make use of them. Kelle was right on the money.

Shannon Mollenhauer, IT management consultant, ComputerLand of Peoria, Peoria, Ill., Shannon@computerlandpeoria.com

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The advances made by IT are enabling other professions to push the envelope - arming scientists with supercomputers to model disaster cleanups, and surgeons with 3-D imaging to locate and remove tumors. Read how this year's **Computerworld Honors** finalists are helping to shape society's future through technology.

THE Greater Good



UNIVERSITY OF MANCHESTER

Doctors Bring 3-D Imaging Into the Operating Room

BY EUGENE A. DEMAYNE

HE HAS A JOYSTICK in one hand and his eyes are glued to a screen, but this surgeon isn't playing a video game. He's in an operating room, rehearsing an incision by looking at a projection of 3-D images of a patient's internal organs. He can rotate and move among "slices," studying fine anatomical details before his real

attempt to remove a tumor.

Researchers at the University of Manchester have developed a 3-D display of imaging data sets that doctors can navigate during operations. Until now, surgeons have largely relied on 2-D images from computerized tomography (CT) scans to show the locations of organs and tumors.

Current CT scanners produce 400 to 2,000 cross-sectional image slices, but only about one-tenth of them are typically used, says Dr. Rory McCloy, lead surgeon of the 3-D Volume Visualization in the Operating Room project, also known as Op3D.

Although many radiology departments have already been using 3-D image reconstructions at

Continued on page 26



their workstations, one impetus of the Op3D project was getting those scans to "the sharp end" — the operating room — where they could be better used, McCloy says.

The computing power of a conventional desktop PC or a physician's laptop wouldn't be sufficient for such a task, says Nigel John, head of the Manchester Visualization Centre at the university. The Manchester, England-based center has developed a custom application using the OpenGL Volumizer application programming interface. It takes graphical data from the Manchester Royal Infirmary's Onyx 300 Silicon Graphics Inc. server and allows for volume-rendering segmentation in real time, he explains.

"We had the power at the university, but [McCloy] needed the data distributed across the network," John says. For that, Op3D uses Manchester University's IGB backbone, which has a 100Base-T Ethernet link to the surgical theater, he says. Mountain View, Calif.-based SGI's OpenGL Viz-server system is used to distribute data across the network.

There is a trade-off between image quality and speed, but "we wanted both and required the highest-quality image possible," says John. The slices, which an XGA data projector displays on an operating room wall, can rotate at more than 10 frames per second, depending on network traffic.

"There's a big 'wow' factor when I show the resolution and mobility [of these images] to X-ray doctors," says McCloy.

"All 3-D images must have an interface that does not require laborious image editing and that is real time in its performance, or it will be rejected as a hindrance to workflow," says Dr. Leo Lawler, an assistant professor at Johns Hopkins University in Baltimore.

Navigating 'Tiger Country'

To move through and among images, McCloy uses an ingenious solution: an off-the-shelf gaming joystick wrapped in a sterile bag.

"A surgeon can change modes, zoom in with a single click. The interface is quite intuitive and was designed to be simple for surgeons to use," says McCloy, who has trained surgical residents to use it. He has applied the Op3D system to surgery involving the liver and pancreas, which he says are "right in the middle of what we call 'tiger country' — in the middle of the body, surrounded by arteries, veins and vital plumbing."

Since the project began in April 2002, Op3D has been used with about 15 patients. Through this technique, McCloy has observed tumors that are inoperable, meaning that their removal would not improve a patient's chances of survival.

"We didn't appreciate the nature of inoperable tumors before with 2-D scans," he explains.

"Surgeons normally have got to go in to find the context of a liver tumor, but now they can check the image to avoid cutting into the tumor and spreading cancer."

"The question is no longer why do 3-D reconstructions, but rather, why not," says Lawler. ■

SUMITOMO MITSUI BANKING CORP.

Bank Uses Online Workflow To Comply With USA Patriot Act

BY PATRICK THIBODEAU

THE USA PATRIOT ACT, an anti-terrorism law enacted in 2001, gives the government the power to demand more information from financial services firms about their customers and to require that it be produced quickly for investigators.

The law asks for a lot, but it didn't rattle Pete McCormick, CEO at Sumitomo Mitsui Banking Corp. in New York.

First, there was no choice but to comply. The government regulates financial services firms, and meeting federal law isn't optional. Moreover, McCormick, who works only a few miles from Ground Zero, says he had that nearby reminder of the need to stomp out terrorism.

Second, if done right, compliance wouldn't necessarily be a big burden. The bank already had many of the pieces in place. For example, it routinely looked for money-laundering activities and had to meet federal requirements to keep track of certain assets. The Patriot Act "isn't so new and so scary," McCormick says.

But the issue McCormick faced was how to improve those processes, scale them to reach throughout the company and turn these monitoring capabilities into "a more seamless manifestation" of existing abilities, he says.

Instead of building a new system, the bank wanted to leverage existing technologies and functions. It turned to an online process that used a browser front end, middleware and workflow engines developed by Sybase Inc. in Dublin, Calif., to automate these processes and speed access to information.

A key requirement was speed. The Patriot Act requires financial services firms to respond to subpoenas in five days or less; normally, it could take weeks to assemble the data.



The law also requires the bank to check government lists of suspicious persons against its own customer records.

"If [banks] are going to invest in this system and have a more complete view of their customers, they might as well leverage this," says Jessica Goepfert, an analyst at IDC in Framingham, Mass.

That's just what Sumitomo Mitsui did. The workflow and improved analysis capabilities will be used in other bank processes apart from compliance and will enhance the bank's ability to know its customers.

"All the technology was there; everyone was using it. I think [the law] created a catharsis," says McCormick. ■

NEW YORK UNIVERSITY

Scholars Archive Artifacts in A Multimedia Digital Library

BY THOMAS HOFFMAN

COLLEGES AND UNIVERSITIES have been digitizing their libraries for the past 10 years to help capture, store and preserve different types of analog content electronically.

But many of those efforts have focused primarily on capturing

text or still images. Over the past four years, librarians, technologists and scholars at New York University have pushed hard to expand its digital library to include myriad content types—from electronic journals to sound and moving images.

"This is a rapidly changing environment, and we need to look ahead to the future," says Carol Mandel, dean of NYU's Office of Libraries.

For Mandel and other NYU officials, digital content can take all shapes and forms. For instance, the university has an extensive collection of materials on activism and radical politics that is accessed by people from all over the world, says Mandel. That collection includes political pamphlets that have been archived to NYU's Web site in digital form (www.nyu.edu).

Meanwhile, NYU's School of Medicine is developing multimedia modules that can be used to teach medical students how to conduct procedures such as gall bladder surgery.

NYU has also been working on preserving unique video materials, such as the hearings and videotaped testimony of the Women's International War Crimes Tribunal on Japan's Military Sexual Slavery. In another project that was spearheaded by a professor in NYU's Middle Eastern Studies department, the university was able to electronically archive rare and often fragile historical documents that were discovered in Afghanistan following the U.S. military invasion in 2001.

The university uses a highly integrated set of technologies to help support its digital library. The core platform is hosted by a Sun Microsystems Inc. Enterprise 15000 server, which runs on Solaris 2.9 and uses Sun's StorEdge T3 disk arrays and a StorEdge L700 tape library system for backup, says Jerome McDonough, NYU's digital library development team leader. NYU also uses an Enterprise 3500 server running Solaris 2.9, which it uses as a research-and-development and testing platform.

For content management, NYU relies on a mix of commercial and homegrown software, including DigiTool from Ex Libris (USA)

Continued on page 28

Intelligence Brief

Analysis: Sun's New Moves

The Old Enterprise IT

Search & Transfer ASA

Microsoft Packard Co.

Wireless & Satellite Networks

Education and Research Network

Knowledge-Net.com Inc.

Michigan State University

New York University

Ohio State University

Sentinel Study Inc., an IBM Trusted Mapping Project

Microsoft's Multigen Division

Microsoft

IBM's Tivoli



A doctor at the Manchester Royal Infirmary uses Op3D technology to navigate 3-D images of a patient's anatomy during surgery, using an off-the-shelf gaming joystick.

their workstations, one impetus of the Op3D project was getting those scans to "the sharp end" — the operating room — where they could be better used, McCloy says.

The computing power of a conventional desktop PC or a physician's laptop wouldn't be sufficient for such a task, says Nigel John, head of the Manchester Visualization Centre at the university. The Manchester, England-based center has developed a custom application using the OpenGL Volumizer application programming interface. It takes graphical data from the Manchester Royal Infirmary's Onyx 300 Sificon Graphics Inc. server and allows for volume-rendering segmentation in real time, he explains.

"We had the power at the university, but [McCloy] needed the data distributed across the network," John says. For that, Op3D uses Manchester University's IGB backbone, which has a 100base-T Ethernet link to the surgical theater, he says. Mountain View, Calif.-based SGI's OpenGL Viserver system is used to distribute data across the network.

There is a trade-off between image quality and speed, but "we wanted both and required the highest-quality image possible," says John. The slices, which an X-CA data projector displays on an operating room wall, can rotate at more than 10 frames per second, depending on network traffic.

"There's a big 'wow' factor when I show the resolution and mobility [of these images] to X-ray doctors," says McCloy.

"All 3-D images must have an interface that does not require laborious image editing and that is real time in its performance, or it will be rejected as a hindrance to workflow," says Dr. Leo Lawler, an assistant professor at Johns Hopkins University in Baltimore.

Navigating 'Tiger Country'

To move through and among images, McCloy uses an ingenious solution: an off-the-shelf gaming joystick wrapped in a sterile bag.

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Continued on page 28

Finalists

Qam International Ltd.

• PolyFuel Inc.

TXU Energy

• U.S. Department of Energy's Pacific Northwest National Laboratory

• China Merchants Bank

• Health Management Corp.

• IntelsatSat SpA

RBC Royal Bank Financial Group

Sumitomo Mitsui Banking Corp.

Church World Service

CyberSoh

NASA Ames Research Center

Network for Good

South Australia Department of Human Services

U.S. Agency for International Development

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Beyond that, universities such as NYU have found themselves pitted against businesses that want to charge a fee for digital content. "Sharing content for scholarly purposes is what we're all about," says Mandel.

But these challenges haven't dimmed Mandel's vision of the future. "The knowledge that can be gained through digital content is what excites me," she says. "Suddenly, scholars have access to history about a country like Afghanistan that historically has not been well understood."

That's also something that excites John Parkinson, chief technologist for the Americas at Cap Gemini Ernst & Young in Chicago. Although Parkinson didn't have previous knowledge of NYU's efforts, he is familiar with what other universities, such as Johns Hopkins University and the University of Chicago, have been doing to make extensive use of digitized content.

"This opens up a whole new set of opportunities for researchers," Parkinson says. Once content is in digital form, he adds, scholars can conduct research "on patterns across geographies and time that would be very difficult to do using analog documents." ■



Working on a project that appears to be a massive Linux supercomputer at the Pacific Northwest National Lab.

Scientists to Test Disaster Scenarios With Supercomputer

BY TODD R. WEISS

AS POWERFUL COMPUTERS ARE harnessed together to create even more powerful supercomputers, scientists continue to find new ways to exploit this strength by

conducting experiments they could only dream about in the past.

At the Pacific Northwest National Laboratory in Richland, Wash., a massive Linux supercomputer that will be completed this month will be used to help model some of the most challenging and dangerous environmental cleanup scenarios in the world.

Scott Studham, technical lead of molecular science computing facility operations at the laboratory, which is part of the U.S. Department of Energy, says the goal was to create a supercomputer that would allow scientists to model disasters that wouldn't be feasible to test in real life.

One such disaster might be an accidental spill of radioactive uranium, Studham says. Using the new supercomputer, scientists will be able to model a wide variety of substances, including enzymes, in their search for materials that could help in the cleanup.

"That would be an example [of testing] that's too dangerous or expensive to do in a real lab," Studham says. With a supercomputer, such high-risk experiments are safe because the testing is theoretical.

Using a powerful custom chemistry modeling program called NWChem, the lab's researchers can peruse particles to search for better ways of cleaning up environmental hazards. "We can solve problems here that can't be solved anywhere else," Studham says.

Other programs can model different types of environmental disasters, including oil spills. The core research areas for the machine are chemistry, subsurface modeling, biology modeling and regional climate experimentation.

When completed, the machine will include 1,900 Intel L3-GHz Itanium 2 processors in 950 nodes, which is believed to be the largest Linux cluster in the world. The supercomputer, which is designed to perform 11.7 trillion floating-point operations per second, will cost \$24.5 million.

Two problems had to be sorted out as the system was being built. One was figuring out how to make 250 TB of total hard-disk space across the 950 nodes appear as one seamless storage area. This was solved by using and tweaking the Lustre global high-performance file system from Cluster File Systems Inc. in Mountain View, Calif. Also difficult was creating an air-conditioning system powerful enough to cool the massive, hot-running machine.

Barton Miller, a professor in the computer sciences department at the University of Wisconsin - Madison, says this kind of supercomputer is just what scientists need to test the stability of stored nuclear bombs, for example, or drug interactions in genetics research, he says.

"They can't test these things out in a meaningful way [in a lab], so you do it using simulation," Miller says. "It's changed the way people do research." ■

APEEJAY SURRENDRA GROUP

Bookseller Expands its Reach With Integrated Internet Platform



Apeejay Surrendra Group, a leading bookseller in India, is expanding its reach with an integrated Internet platform.

BY JAHNURAN VIJAYAN

Since it first opened its doors in 1920, Oxford Bookstore, a small bookshop in the heart of Calcutta's business district, has been a favorite destination for book lovers. And while the store had always done a brisk business, for 80 years patrons were able to find their literary treasures only at its sole location in India.

In 2000, management at Apeejay Surrendra Group — an industrial conglomerate that now owns Oxford Bookstore — decided to expand the business to reach customers in other major Indian cities. The challenges were huge, says Chief Operating Officer Sanjeev Mehra.

For starters, the idea of a chain store for book retailing was somewhat alien in a country where national consumer chains are still a rarity. The communications and logistics infrastructure was poor, and there was no information available on the book-purchasing habits of consumers in the metropolitan areas of India.

"Chain-store retailing had just about started in India [in 2000]," Mehra says. As a result, much of the infrastructure and information required to deliver the economies of scale that retail chains need was missing, he says. "At that time, the Internet seemed to be the best bet" to address

some of these issues, Mehra says.

As it began its expansion into other cities, the company decided to launch an integrated Internet platform that would tie new brick-and-mortar shops back to the mother ship in Calcutta. It would also open up an online presence for the bookseller, says Niloy Mukherjee, the project's technical architect.

In that sense, Oxford's initiative was different from those of companies such as Amazon.com Inc., which started as an online store, or Barnes & Noble Inc., which already had an established retail presence when it launched its online store, Mehra says.

Three years into the effort, the project has begun to pay off. Oxford opened new retail stores in three Indian cities and recently launched a fourth in the southern city of Bangalore. Its retail Web site was one of the first in the country to accept credit card payments.

The underlying Internet system that has driven much of the expansion was built by Cognizant Technology Solutions Corp., a Teaneck, N.J.-based provider of outsourced services. The three-tier architecture features Microsoft Corp. servers running Active Server Pages at the front end, application servers running Internet Information Server software in the middle tier and Oracle Corp. database server software at the back end, says Mukherjee, who works at Cognizant.

The system gives Oxford a single, consolidated view of its online and retail store operations across the country. For example, the company can use it to centrally track sales, consolidate orders, replenish inventories, study purchase trends and forecast sales across both physical and online stores. New stores immediately become part of the network when they plug in.

The integration of its online and physical store operations has yielded other benefits as well. For instance, Oxford is able to serve up personalized service at its retail stores for customers who have purchased from its Web site.

"If we didn't have the system, it would have been chaotic to set up stores," Mehra says, adding that this approach "has allowed us to achieve better costs, control, security and audit." ■

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Oxford Bookstore provides history, COO Suresh Mehra (left) and CEO Prat Paul.

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Manchester Visualization Center

Rita Medical Systems Inc.

TeraMedia Inc.

Institute of Atmospheric Physics

Pittsburgh Supercomputing Center

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Singapore Inc.

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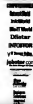
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SECURITY MANAGER'S JOURNAL Single Sign-on Stalls as Kazaa Bets the Boot

A directory integration project trips over numerous user names, but Matthias Thurman moves forward in blocking the use of file-swapping programs on the corporate network. **Page 36**



OPINION Road to IT Renaissance

Columnist Paul A. Strassmann says that Web services will change both IT and the power structure within organizations. **Page 38**

QUOTE OF THE WEEK

“We’ve had tapes that were in the bottom of a Dumpster swimming in Dumpster juice. That was gross, but it was a good recovery.”

—Dan Garneau, vice president of development, Remco Data Corp.

PORTAL POWERS GE SALES

A sales portal integration project at GE Power has substantially increased productivity, giving the sales team more time for calls. By Gary H. Arntes

IT WAS SEPTEMBER 2001, and Jeff Immelt had just become General Electric Co.'s new chairman. His predecessor, Jack Welch, had come up through the engineering ranks, but Immelt was a marketing guy, and one of his first actions was to survey the company's sales force. He was dismayed to find that members of the sales team were spending far more time on deskbound administrative chores than in face-to-face meetings with customers and prospects.

"He put a personal challenge before all the business units," recalls Venki Rao, an IT leader in global sales and marketing at GE Power Systems, an

Atlanta-based division focused on energy systems and products. "He said we needed to turn that around, to spend four days a week in front of the customer and one day for all the admin stuff."

FIELD REPORT

GE Power hasn't yet reached that goal, but it is making progress, thanks to a new sales portal that went live in April last year. The portal, a complex amalgam of products that pulls information from multiple data sources, was developed in just six months, thanks in part to its high-level sponsorship and the use of an IT project methodology based on GE's Six Sigma quality program.

GE Power's salespeople spent much of their time at their desks because they had to go to many sources — some manual and some electronic, some internal and some external — for the information needed to sell multimillion-dollar turbines, turbine parts and services to energy companies worldwide. Now, Rao says, they have a "one-stop shop" for just about everything they need.

Various existing GE databases, previously unconnected, are the primary data feeds into the portal, providing everything from sales tracking and customer data to parts pricing and information on planned outages. GE Power also added external data such as news feeds.

"I have the sales portal as my home page, and I use it as the gateway to all the applications that I have," says Bill Snook, a sales manager at GE Energy Services in Canada and one of 2,500 users of the portal. "Before, you were randomly searching for things. I'd go to a site, and if it didn't have the answer, I'd go to another site." Snook says he used to go from one application to another, and each required a separate sign-on and password. The portal has "made multitasking much more efficient" and has increased face time with customers, he says.

The heart of the system is the Java-based Epicentric Framework Server from Vignette Corp. in Austin. This portal software gives users a single unified view into a wide variety of information sources and applications. It dynamically assembles personalized "portlets," such as a customized view of industry news, a look at the user's own customers or his sales performance year-to-date, and presents them in a unified way to the user's Web browser.

GE Power uses BEA WebLogic Server from BEA Systems Inc. in San Jose for the front-end Web server functions. A product for single sign-on, SiteMinder from Netegrity Inc. in Waltham, Mass., gets users into the



THE PAYOFF

TOM GEROWSKI, sales digitization leader at GE Power Systems, says the sales portal and other automation efforts have increased the productivity of the sales force by some 25%.

"Salespeople are spending less time searching for information," he says.

The portal has also resulted in some unexpected benefits. "As we built the data mart, we realized the portal, it became clear that we would leverage that data for management as well," says Steve Sales, IT sales program manager. "So we built modules geared for performance management." Sales managers can now look at data such as sales leads, orders and receivables, and they can generate reports. At GE, a project must have at least a 2-to-1 payback. Venki Rao, an IT leader in global sales and marketing, says GE Power spent \$150,000 for software licenses, but he declines to quantify other costs. Jim Yeung, a senior GE consultant who worked on the project, says, "The global sales portal came in at a very strong \$12 million."

As for the financial benefits, Gerowski says that with a 500% annual return on investment, the project "will achieve the target 2-to-1 investment payback."

—Gary H. Arntes

sales portal and to multiple applications behind the portal using just one password. At the bottom of the three-tier architecture sit various Oracle Corp. and Siebel Systems Inc. databases running on mammoth Sun Microsystems Inc. Solaris servers at the company's Cincinnati data center.

The sales portal sits on top of an Oracle data model created specifically for it. The system pulls data needed in real time, such as updates to the customer master file, into the mart using special "adapters" created with the Integration Platform from webMethods Inc. in Fairfax, Va.

The adapters connect to a variety of applications and database types. GE Power loads data updates that are needed less often, such as turbine installations, once a week using an extract, transform and load process.

Passing the Toll Gates

GE Power kicked off the project in September 2001, had a pilot portal running by January 2002 and had the production system up three months later. Project managers say much of that rapid deployment stemmed from the use of the company's life-cycle Project Management Methodology (PMM).

PMM, which draws on the principles of GE's Six Sigma quality practices and principles, divides the development process into six phases, each of which ends at a "toll gate" that must be passed before the next phase begins.

One of the more rigorous steps in

the PMM is the evaluation and selection of vendors.

The portal software was evaluated against two dozen technology criteria, says Jim Young, president of Infotech Consulting Inc. in Atlanta and a former GE Power consultant who served as one of the project managers during the development process.

The most important criteria were cost, the ability to run the portal on multiple application servers and operating systems, and ease of integration with Verity Inc.'s search engine, with other GE applications, with tools like webMethods, and with standards such as XML, HTTP and SOAP.

Epicentric owned out portal products from IBM, Computer Associates International Inc., Plumtree Software Inc., iPlanet (now part of Sun), BEA and Oracle, Young says. It was chosen largely for its ease of integration; ability to span multiple, heterogeneous databases; and ability to be customized by end users, he says.

"A huge criterion for GE was they wanted the power in the hands of users: salespeople and management staff," Young says. "And as you go across the enterprise, you want to go across lots of different products, lots of different databases and cost have to go back to it."

Young says GE Power experienced some difficulties because it was under pressure to bring up the portal at the same time that other important pieces of software, including the Negritivity

single-sign-on software and the Verity search engine, were being introduced at the company.

For example, because single sign-on wasn't in place for all the applications that the sales portal needed to touch, the portal had to check user permissions by going directly to some applications using the Lightweight Directory Access Protocol (LDAP), rather than to a single table in SiteMinder.

Security Issue

"Because Epicentric could go to either Negritivity (SiteMinder) or LDAP, it presented a small security issue internally, but there was no other way to do it," Young says. Nevertheless,

he says, the issue was resolved by the time the portal system went into production, and all permissions are now verified via the authorization table in SiteMinder.

The hardest part of the project was getting past the first two Six Sigma toll gates: project definition and cost-benefit measurement, Rao says. Defining requirements was tough because the sales portal's primary users are salespeople scattered around the world. Also, the system was intended to address the needs of disparate sales groups throughout GE Power.

"Because Power Systems has nine different businesses, you have to go and sell it to each and every business leader," Rao says.

The project team used a kind of rapid prototyping — a "launch-and-learn process," as Tom Czerwinski, sales digitization leader, calls it — to focus and win the minds of the sales force.

"For example, we say we are going to focus on cash and receivables, and so we put cash and receivables metrics on the portal and start getting feedback immediately," he explains. "If we spent a month putting something rough together, about three months later we'll have it fine-tuned based on the feedback."

Developers also put portal prototypes on PCs in the common areas at the company's annual sales conference.

Salespeople could take it and type in their reactions and suggestions, Rao says. The open architecture

and flexibility of the sales portal software make it especially easy to enhance and extend it, and GE Power plans to do so, Rao says. Over time, his group plans to add new tables and new fields to existing tables the portal accesses.

For example, travel and living expenses could be automatically loaded into the data mart, and the portal could show those expenses for individual salespeople or roll them up for group or regional management review. Future customizations could even include extranet extensions to customers and sales channel partners, Young adds. ■

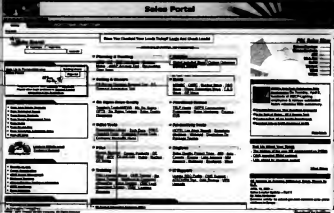
THE SIX SIGMA EFFECT

Here's how GE Power's Six Sigma quality program shaped its sales portal project.

QuickLink 36429
www.computerworld.com

OF OPPORTUNITY

By integrating information from several ERP systems and data warehouses into a single view, GE Power's sales portal has improved sales productivity by 25%.



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20	15%	1995	12,000,000	12,000,000	100%	



As vice president of development at *Renew Data Corp.*, an electronic evidence and data recovery services provider in Austin, **Dan Gardner** played the leading role in the development of the company's proprietary forensic and data recovery software. Gardner recently spoke with *Computerworld's* Lucas Mearian about data recovery best practices, how *Renew Data* restores lost data and how administrators can minimize the risk of data loss.

What should administrators do when faced with a storage media failure? Our advice is if the hard drive is making a noise or a tape is stopping, don't try to fix it yourself. Once the media starts to fail, it's got a pretty limited lifetime. I recommend pulling the plug. Powering down can take time and cause further damage. Don't be hasty to try things that may cause further damage, or don't try things that may cause logical damage or data loss. It doesn't cost a nickel to call us and just get a quick assessment of whether or not there is a data recovery scenario involved.

What can IT do to protect against the most common causes of data loss? One point that gets overlooked in policies and procedures for disaster recovery is testing. There's an old saying, "One test is worth a thousand opinions."

Which types of problems are the toughest to remedy? By far, the physical damage. These types of things involve taking it into a clean room and trying to attempt

a repair of what's repairable and then attempting to read what's readable. It's very labor-intensive and requires the skill of someone who knows what they're doing in order to manipulate the hardware into a readable state.

At what point do you decide that data is unrecoverable? Generally speaking, we don't give up. There's obviously clear situations, like when all the magnetic

substrate is scrapped off platters, when it's obvious. As long as there's an outside chance of getting something, we continue.

What other types of media can you recover? Things like flash cards from the digital cameras, SmartMedia, Memory Sticks, [and] all forms and manner of removable storage, such as floppies, optical drives, Zip drives, Ditto drives, CD and DVD media.

What can administrators do to reduce vulnerability to media failures? Given the fact that there is a certain failure rate among all backup media, you need to audit that media. Make sure it works. Make sure you backed up what you think you backed up. Make sure you can restore what you've backed up. We've seen backup tapes come in under the assumption that they've backed something up but never actually did.

That's a really tough thing to tell customers. They send in a tape for data recovery because they can't restore a certain file, and we tell them we can't either because it wasn't there in the first place.

If forensic evidence needs to be preserved, what do you do that IT can't with a forensic disk-imaging software package? That revolves not so much around capability but around legal conditions. We bring in an objective third party if we're talking about evidence, because there's a real credibility issue there. There are chain-of-custody issues that require someone being a witness.

From a technology point of view, Encase is the standard in the forensics area and therefore it's used by investi-

Top 10 Causes Of Data Loss

- 1 Mechanical hard-drive failure
- 2 Data structure corruption, such as invalid File Allocation Table partitions
- 3 Accidental or intentional data deletion
- 4 RAID server failure
- 5 Backup tape malfunction
- 6 Physical tape damage
- 7 Accidental overwrites
- 8 Software corruption
- 9 Viruses
- 10 Natural disasters

SOURCE: RECOVER DATA CORP., AUSTIN

gators. But our people are also very well trained on the whole chain-of-custody issue, which generally IT people aren't.

What were some of your more unusual successes? We've had tapes that were in the bottom of a Dumpster swimming in Dumpster juice. That was gross, but it was a good recovery.

Some of the most challenging recoveries we've done involved proprietary systems, like GE's MRI systems, where from a computer point of view, it's not in the mainstream [and] there's a pretty hefty amount of work involved in determining how to get data off the media.

How quickly can you restore my data?

There's a number of possible scenarios. If we're talking about single hard drives, first we have to assess if there's anything physically wrong. If the magnetic media on the platter has been damaged and completely scrapped off, that's an unrecoverable scenario.

Generally, it's one day for the initial process of reading the data, and then it's another day for processing the data, and then it's another day for restoration of data on return media.

What's it going to cost me to get my data back? The most common scenario is a single hard drive. Depending on the type of failure, whether it's a logical failure or to a severe physical failure, it's between \$300 and \$2,000. ■

How to Cut Your Data Losses

Data recovery specialist Dan Gardner offers tips on how to avoid losing data and what can be done when disasters happen. By Lucas Mearian

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How to Cut Your Data Losses

Data recovery specialist Dan Gardner offers tips on how to avoid losing data and what can be done when disasters happen. By Lucas Mearian

A high-contrast, black and white photograph of a person sitting at a desk in a dark room. The person is seen from the back, looking at a computer monitor which is the primary light source. The person's arms are crossed. The overall mood is contemplative and focused.

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IBM

Single Sign-on Stalls as Kazaa Gets the Boot

Numeric user names derail directory integration work, but a network redesign enables blocking of bandwidth-hogging file-swapping programs. By Mathias Thurman

SINCE MY ACTIVATION by the Air Force Reserve, I've had to dedicate almost all of my time to my new duties. For now, I'm in a location stateside that has Internet access, so I can log into my corporate LAN to check e-mail and access server resources. I've also been able to dial into several meetings on projects that I've been managing or that I'm contributing to.

One such project involves creating a centralized authentication system for our Solaris servers. We're having problems with Novell eDirectory and its ability to effectively handle authentication requests from those servers.

One of the issues involves user names, which are typically based on a simple naming convention such as the first letter of the user's first name followed by his last name. However, my company's human resources department decided to use employee numbers as user IDs for access to the PeopleSoft system. My team uses eDirectory to store those numeric user names, and we want to use the same eDirectory system for our Unix authentication so employees have single sign-on access to any resource. Unfortunately, it appears that Solaris doesn't like user names made up of only numbers. I've been told that some Solaris authentication modules may not work with such names.

Another problem involves our RSA SecurID servers, which are responsible for two-

factor token-based authentication. We configured these to recognize standard user names that conform to our network log-ins.

To add to the complexity, we use Windows 2000's Active Directory to store network log-in credentials. We use these credentials to log into the Microsoft Exchange

Server e-mail system and to access Windows file-server drive shares. The PeopleSoft log-in is for access to HR and payroll services.

We'll probably configure the eDirectory to have two user name attributes: one for PeopleSoft and the other for Unix authentication.

The beauty of directory services is that the rest of the attributes, such as the user's home directory, default shell and group, can remain and be correlated to the Solaris user identification without affecting the PeopleSoft log-in.

Another issue involves So-

laris 8 incompatibility with eDirectory. To resolve this problem, we were planning on using either Novell's DirXML or the PADL open-source libraries, a Lightweight Directory Access Protocol (LDAP) integration tool from Melbourne, Australia-based PADL Software Pty. We could solve the problem by upgrading to Solaris 9, since that version's LDAP client works better with eDirectory. But that migration is at least a year off, so for now we have to make do.

I've just learned that Sun has released a patch for its Solaris 8 LDAP client that improves compatibility with eDirectory, but I don't have much information on that yet.

Network Abusers

I'm also working on a project to control the abuse of instant messaging and file-sharing programs. Our general counsel has signed off on a policy that prohibits employees from using company resources for nonbusiness activities. Reading our intrusion-detection logs, we discovered that most of the abuse comes from users of Yahoo Messenger and file-sharing programs like Kazaa and Morpheus. The use of these programs reduces productivity, ties up network bandwidth and raises security issues when employees download files infected with spyware or viruses.

We could configure our firewalls and routers to block access to those unauthorized applications and Web sites.

The problem is that they're not unauthorized for everyone. For example, our technical support group uses Yahoo Messenger extensively to help customers with software problems, and IT security needs access to hack Web sites for research purposes.

We also haven't been able to block users' access by IP address because we use a Dynamic Host Configuration Protocol server, which gives users a different IP address every time they log on. Also, we use a single range of IP addresses for all corporate campus PCs, so we can't even block a range of addresses from accessing these services.

The good news is that our network department has started redesigning the IT infrastructure and is segmenting the network. Network operations, engineering, quality assurance, security, HR, finance and many other departments will each have their own range of IP addresses. That will make it possible to configure our firewall or router access-control lists by department.

We will be able to block access not only to illegal programs, but also to legitimate applications for users outside a given department. The network team will be able to configure the firewall to, for example, prevent tech support from accessing the payroll application — and to prevent everyone except the tech support group from using Yahoo Messenger. At our next meeting, we will discuss how to restrict access to even more unauthorized Web sites.

Meanwhile, as military needs wind down, I'm hoping for an early release from my Reserve duties. I hope to be writing the next column from my home office. ■

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com to join the discussion in our forum. QuickLink.a3590

To find a complete archive of our Security Manager's Journal, go online to computerworld.com/secjournal

**SECURITY
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We could configure our firewalls and routers to block access to . . . unauthorized applications and Web sites. The problem is that they're not unauthorized for everyone.

SECURITY LOG

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IBM

BRIEFS

Redline Announces Wireless Device

Redline Communications Inc. in Markham, Ontario, last week announced a long-range broadband wireless device designed to replace leased T1 lines. The AM-307 provides up to four time division multiplexing links by using Orthogonal Frequency Division Multiplexing at up to 7200kb/sec. It works in the unlicensed 5.8-6.0-GHz band and functions at distances greater than 50 miles. The AM-307 will ship by the end of June. Pricing wasn't disclosed.

IBM Launches Low-end Server

IBM last week introduced the eServer p615, a new low-end server that includes a Power4-processor running either Linux or IBM's AIX operating system. The server, which can be equipped with one or two processors, is priced beginning at \$5,745.

Emulex Integrates HBAs with Brocade

Emulex Corp. in Costa Mesa, Calif., last week announced that its LightPulse LP9802 and LP982 PCI-X host bus adapters (HBAs) have been tested to work with Brocade Communications Systems Inc.'s line of storage-area network switches. The HBA offer 30% more I/O processing power than previous models and are backward-compatible with existing 100/sec. and 200/sec. Fibre Channel Peripheral Component Interconnect installations.

SAP Apps Joined With Dassault Tools

SAP AG announced last week that it was integrating its mySAP Product Lifecycle Management application with Dassault Systemes SA's CATIA V5 product development software. SAP claims this will allow manufacturers to more easily collaborate with partners and suppliers on engineering and procurement.

PAUL A. STRASSMANN

Web Services: Road To IT Renaissance

IN MY MAY COLUMN, I discussed why the enterprise computing solutions investment cycle was coming to an end, to be displaced by Web services [QuickLink 38250]. Unfortunately, a technical description of how Web services function doesn't explain why we've entered a new evolutionary stage in how computing will affect organizations.

The idea that computing has evolved over several cyclical stages is now accepted wisdom. Various authors have discerned a succession of three-, four- or

even eight-stage cycles since 1950, depending on how they sliced up the written record. Whoever the computer industry experiences one of its periodic slumps (about every six to eight years) the gurus, investors and entrepreneurs engage in a guessing game of what will be the next cycle to spawn yet another bonanza.

Almost everyone agrees that technological innovation is needed to bring about the next growth cycle. There is also a consensus that the next wave will have something to do with Web services. However, just tagging Web services as the engine to create another round of trillion-dollar investment is a dead end. For the next cycle to happen, CEOs and CFOs will demand demonstrable gains in added value.

In this environment, anything tagged as a technological improvement won't sell in the boardrooms. Therefore, market planners and consultants are repackaging Web services as "customer-centric computing," "human-centered computing," "ubiquitous computing" and so forth. This emerging list of hyphenated labels suggests that the control over IT will



move closer to the customer. Such reshuffling will be enormously expensive because it will require junking much of what's in place right now.

The real story is that the next wave of IT investments will shift much of the control over IT from the producers of IT (vendors, CIOs, consultants) to those who can decide what information is worth getting in order to do their jobs more effectively. When I talk about Web services, I really mean a practical demand for CIOs to restructure technology to ease the traumatic shifts from supply-side economics to demand-side economics.

I'm sure that there will be many debates about whether such a transformation will actually happen, and if so, how rapidly. Before making predictions, it's useful to examine how employees will acquire the capabilities to decide what information to obtain and how much to pay for it, and those are tough questions.

Moving decision-making about the uses of IT calls for a radical cultural change. Right now, with the exception of what they fix up on their PCs, employees are largely force-fed from a

menu that has been cooked by a few decision-makers, mostly technologists. The current organization of IT is like a 13th century European town, where the local guilds and the bishop decide what people may wear and discuss. Introducing a Wal-Mart of choices into such a setting is likely to upset those who hold power.

But Web services must be seen not just as a technologically advanced method for managing and distributing information. Internets and intranets must also be understood as an instant marketplace where individuals can exercise a wide range of choices about what information to acquire and how to take advantage of an enormous variety of information-processing capabilities.

If the exercise of individual choices is the key to the empowerment of a vastly more productive information workforce, we must set out now to lay the foundation for a software architecture that will make that feasible.

After an examination of what is actionable now, I have concluded that vendor-independent portal technology will be one of the principal means of making Web services valuable. CIOs should go back to their architectures and remove vendor-specific ways in which people are forced to interface with applications.

In their place, CIOs should promote the adoption of generic and universal portals that can be adapted to employees' scope of work, skills, literacy and habits.

I see infinite opportunities for the expansion of Web services if people are offered the opportunity to shape their portals as a friendly companion for trips into the world of networked knowledge. ■

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MANAGEMENT

06.02.03

QUOTE OF THE WEEK

“A few years ago, people got jobs just by having certifications. Today, you’ve got to be able to break down your accomplishments and provide specific ROI.”

— Jeff Markham, manager, Robert Hall Technology

OPINION

The ROI of Privacy Seals

BBB privacy logos on Web sites aren't cheap, but they might be worthwhile in boosting consumer confidence, says privacy columnist Jay Cline. **Page 42**

HOW TO

Talking Long-Distance

As more companies conduct job interviews by phone to save time and money, job candidates need to make the best impression they can. Here's some advice for handling those calls. **Page 41**



BUY! NO, BUILD!

The debate between
buy and build advo-
cates continues.
By Steve Ulfelder

DO YOU BUY? OR DO YOU BUILD AND ADJUST?
It is an elder among IT debates. It is our own "Tastes great!" "Less filling!"

When you need a new enterprise software tool, what's wiser: buying a packaged application from a major vendor and customizing as needed? Or developing it yourself from scratch? Interviews with IT leaders show this conundrum is no closer to resolution today than it was a quarter-century ago. But that doesn't mean that things haven't changed.

Build advocates need only wave a fistful of *Computerworld* articles dating back to the mid-1990s, when enterprises discovered the joy of ERP. It is hardly a secret that many ERP, CRM and supply chain management implementations have blown up — wasting millions, causing corporate turmoil for years and, in a few cases, being named as factors in bankruptcies. Moreover, CIOs and business executives alike have grumbled in recent years that even when such projects "succeeded" (that is, when they don't fail utterly), return on the investment comes slowly — if at all.

On the other hand, there's clearly a limit on how large an application IT can create. "You don't see enterprises trying to re-create SAP," jokes Jennifer Chew, an analyst at Forrester Research Inc. in Cambridge, Mass. Many of the applications CIOs point to as triumphs of the build philosophy are relatively modest — making data easier for users to access via a browser, perhaps, or allowing previously isolated software tools to communicate with one another.

So what'll it be, buy or build? Some of today's arguments may surprise you.

Buying and Crying

Rich Burrek, CIO and senior vice president at Lydian Trust Co., recently made the decision to buy a packaged application, and the process reinforced his philosophy to build his own software whenever possible.

Lydian, a Palm Beach Gardens, Fla.-based parent company to several financial-services businesses, needed Web-based mortgage-origination software that the lenders use to receive and process loan requests. Many vendors offer mature applications that fill this vertical need. "It would have taken us a

year to build it" at a cost of about \$1 million, Bursack says. The price of the packaged application selected by Lydian (Bursack declined to name the vendor because the contract has yet to be locked in) is about \$250,000, he says, and another \$250,000 in resources — in-house developers' time and consulting — is needed to get the application running.

The copper is that Lydian hopes to put the packaged application in production in six months. "So that's a half-million-dollar savings, plus we're six months closer [to a functioning application]," Bursack says. "When I took these two factors to the board, it was pretty persuasive."

While the 50% savings made this a clear-cut buy decision, Bursack discusses the experience with enthusiasm usually reserved for a pulled groin. Lydian's senior management team has a strong IT background and prefers to build applications whenever possible — and despite the overwhelming cost advantage of purchasing packaged mortgage-origination software, this experience is doing little to change their minds about the non-finance-related advantages of the build approach. (Bursack believes the unpleasantness isn't his specific vendor's fault, but rather the nature of the buy beast.)

In January, after running the numbers, Bursack knew he would purchase a packaged application and began vendor meetings. "That took us a month, which everyone told us was very aggressive, and another [month] to negotiate and sign the contract," he says. (As noted above, there are still T's to be crossed. I's to be dotted.) The software was installed in March and was scheduled to go live May 1.

"We have five people dedicated to managing this project," Bursack groans. "Five dedicated resources during this period, then else." There are business analysts who act as conduits between Lydian's business units and IT, and two are developers writing code to make sure the company's existing applications work with the new mortgage-origination software. "When you're working with vendors there's this ongoing battle," Bursack says. "Things snowball; you can lose control." He contrasts this experience with a recent build project — an extranet sales tool for third-party brokers and account executives who do business with Lydian.

The company needed to give those professionals real-time, browser-based access to mortgage approval status. Bursack simply grabbed a few developers from his six-member team and went at it. "I met with an analyst and a systems architect" to sketch out the basics, he says. "Then we made a presentation to two people in operations and started development the same week. From problem analysis to going live took three weeks."

Bursack shakes his head. "With vendors, it's just a grueling process." In particular, he chafed at the vendor selection process, the contract negotiations and the need to rely on outside developers. But in the case of the mortgage-origination software, the massive price differential trumped all other arguments and made the buy decision unavoidable.

Customize With Caution

One of the popular build arguments is that there's really no such thing as a major packaged application — vendors' suites must be customized so heavily that getting your allegedly off-the-shelf application running requires a massive amount of developer time and a shotgun wedding with an integrator. But some IT leaders turn this argument inside out. According to David Schwartz, CIO at George Washington University in Washington, the big problem with ERP implementations is that companies overcustomize software. "A lot of these modifications are simply preferences," he says. "People change the way a screen looks or what appears on a report."

"If you buy packages, you want to keep customization to an absolute minimum," agrees Chuck Mackey, IT director at the Eljay Division of privately held Eljay

Manufacturing Co. in Oak Brook, Ill.

The diversified manufacturer of plumbing products and cabinets built its own software until 1992, when it put in place a PeopleSoft Inc. ERP suite. And despite a lousy experience with a systems integrator (Mackey declines to name the firm but says, "They did a very poor job for us"), he has no regrets. Eljay's annual PeopleSoft maintenance fee is equivalent to two or three developers' salaries, Mackey estimates. And for that fee, he says, "today we're totally Web-enabled. There's sure no way we would have gotten here with two or three more developers."

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BUILD



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line-of-business representatives, the implementation team numbered 50 to 60. Schwartz claims there are Ivy League colleges (which he declines to name) "that paid two or three times" \$25 million because they were wild on customization.

Build If You Must

"The last thing we wanted to do was build this app ourselves," says Rick Peltz, CIO at Marcus & Millichap. Late last year, the Encino, Calif.-based real estate investment brokerage company shopped around for off-the-shelf tools that would let its sales agents pull data from many sources (photos, published articles, government information and others), use it to generate marketing packages for individual properties and send that information back to the company's SQL Server database. Peltz as-

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But even with his two consultants "on the phone all the time with Microsoft" trying to pull something together, Peltz found that PowerPoint's architecture made it impractical to set up a way to prevent users from deleting information they had created. This feature was a must-have; turnover among real estate agents is high, and many are technology neophytes, so Peltz was concerned that users would accidentally delete marketing packages they had just created.

As a result, Marcus & Millichap was forced to spend its budget (\$250,000 to \$300,000) "to re-create PowerPoint from a user interface perspective, but without all the functionality," Peltz says — and with the ability to build "whiteboard" fields that users can't delete. While the company would have preferred to buy a packaged application, Peltz did find some advantages in building his own. Four months after work began, the tool was already being beta-tested because Marcus & Millichap set its own aggressive timetable. And the consultants who were initially earmarked for integrating packaged software have instead been writing code and auditing one another's work.

About the only thing that's certain in enterprise software today is that even passionate build advocates aren't about to create true ERP or CRM suites from scratch. But at the sharp end of business, where money is made or lost, perhaps no vendor can truly meet your company's needs — perhaps you're on your own. AMR Research Inc. analyst Eric Ausvold believes a new mind-set is required: "In the past, people thought of packaged apps as the endgame," he says. "But we need to start thinking of them instead as the foundation — the system of record." ▶

BUYING TO EASE INTEGRATION

Buying multiple applications from one vendor helped ease integration costs and headaches at World Communications.

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It would have taken a lot of time to build it.

RICH KORMAN, senior vice president and CIO, Lydian Trust Co.

TIPPING FACTORS

Small business applications from third-party developers are a good choice for ERP and CRM applications. Software is easier to integrate with existing systems than custom-developed applications. Packaged applications are often easier to integrate with existing systems than custom-developed applications. Applications from third-party developers are often easier to integrate with existing systems than custom-developed applications.

Uffelder is a freelance writer in Southboro, Mass. Contact him at sulfelder@charter.net.

year to build it" as a cost of about \$1 million, Bursek says. The price of the packaged application selected by Lydian (Bursek declined to name the vendor because the contract has yet to be locked in) is about \$250,000, he says, and another \$250,000 in resources — in-house developers' time and consulting — is needed to get the application running.

The caper is that Lydian hopes to put the packaged application in production in six months. "So that's a half-million-dollar savings, plus we're six months closer [to a functioning application]," Bursek says. "When I took those two factors to the board, it was pretty persuasive."

While the 50% savings made this a clear-cut buy decision, Bursek discusses the experience with enthusiasm usually reserved for a pulled groin. Lydian's senior management team has a strong IT background and prefers to build applications whenever possible — and despite the overwhelming cost advantage of purchasing packaged mortgage-origination software, this experience is doing little to change their minds about the non-finance-related advantages of the build approach. (Bursek believes the unpleasantness isn't his specific vendor's fault, but rather the nature of the buy beast.)

In January, after running the numbers, Bursek knew he would purchase a packaged application and began vendor meetings. "That took us a month, which everyone told us was very aggressive, and another [month] to negotiate and sign the contract," he says. (As noted above, there are still T's to be crossed. T's to be dotted.) The software was installed in March and was scheduled to go live May 1.

"We have five people dedicated to managing this project," Bursek groans. "Five dedicated resources doing nothing else." Three are business analysts who act as conduits between Lydian's business units and IT, and two are developers writing code to make sure the company's existing applications work with the new mortgage-origination software. "When you're working with vendors there's this ongoing battle," Bursek says. "Things snowball; you can lose control." He contrasts this experience with a recent build project — an extranet sales tool for third-party brokers and account executives who do business with Lydian.

The company needed to give those professionals real-time, browser-based access to mortgage approval status. Bursek simply grabbed a few developers from his six-member team and went at it. "I met with an analyst and a systems architect" to sketch out the basics, he says. "Then we made a presentation to two people in operations and started development the same week. From problem analysis to going live took three weeks."

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BUY



It would have taken a year to build it.

RICH BURSEK, senior vice president and CIO,
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CLIPPING FACTS



IF HE PLAYED BASEBALL, Kevin Arensdorf would be an all-star; he's hitting .500. A Unix systems administrator at Iowa Telecom in Newton, Iowa, Arensdorf has had phone interviews for four different jobs, and he's landed two of them, including his current one.

Rick Sheeley is also hitting well in the telephone-interview game. Previously an independent IT contractor who had many jobs and now a data warehouse administrator at a major Las Vegas casino company, Sheeley has had about 100 telephone interviews over the past 25 years and estimates that he has landed 15 to 17 jobs from them.

Telephone interviews are becoming more common in today's soft IT hiring market because they save time and money compared with face-to-face interviews. Here are some tips for job seekers to boost their success rates when interviewing by phone.

First, recognize that in most cases, telephone interview are used to screen candidates, not to hire them, says Edwin Pollock, regional president in San Francisco at career management company Bernard Haldane Associates. "They're asking questions to cut down the pack."

That means your goal for the interview should be to secure a face-to-face interview, not to get the job, notes Laurie Levenson, president of DirectAccess Staffing Inc., an IT staffing firm in Carlsbad, Calif. Show your enthusiasm. If you're in another city, say you'd be happy to fly in for a personal interview.

Don't be overbearing, and don't oversell yourself just work to get to the next level, recommends Ken Hill, who worked for 17 years in human resources before moving over to IT. He's now CIO at defense contractor General Dynamics Corp. in Falls Church, Va.

Make clear how technically adept you are. Look for articles about a prospective employer's IT department, Hill advises. For example, you might learn that it has just finished an SAP implementation. Try to tie that piece of information to your own background and experience.

And don't assume that it will be easy to get the next interview. For instance, for any given IT position, Jace Mouse, manager of application development at Cars.com in Chicago, conducts about 15 telephone interviews and asks only four candidates to come in for a face-to-face meeting.

Don't try to wing a telephone interview. "My first objective [in a telephone interview] is to see how



seriously the candidate prepared," says Oren Ezra, vice president of products services at Atlanta-based Jacada Ltd., which develops legacy-integration applications. "If they haven't taken the time, I get disappointed very quickly."

Preparation Is Key

One benefit of a phone interview is that you can have all your research laid out on your desk because the interviewer can't see you. Take advantage of this.

Sheeley tries to anticipate questions about his technical skills and prepares a cheat sheet with notes about his experiences with technologies and his project successes.

Be ready to describe a few of your accomplishments. Arensdorf makes sure he's comfortable and prepared and in a quiet place for the interview. He reviews his résumé and research material beforehand. He likes to schedule interviews in the morning, leaving the rest of the day for other things.

Research the employer. "One of things that turns me off the quickest is the candidate who doesn't know what we're about," says Hill. Candidates who

prepare have the edge over those who don't.

Jeff Markham, a manager in the San Francisco office of staffing and placement firm Robert Half Technology, says a lot of candidates take the telephone interview for granted, thinking that the company liked their résumés and that it's just a formality to get interviews. Not true. You can't make up for a lack of preparation with personality, body language or eye contact when doing a telephone interview, he explains.

Phone interviews tend to be fairly short — 15 to 45 minutes. So be prepared to talk more about what projects you have worked on and what you have done rather than the actual skills you have, says Hill.

Provide Your Own ROI

And don't underestimate the interview's importance. Says Markham: "A few years ago, people got jobs just by having certifications. Today, you've got to be able to break down your accomplishments and provide specific ROI." For example, if a programmer claims C++ development as a strength, Markham might say, "Give me an example of an application you developed with C++ that had measurable results, where it was better, faster, stronger."

Jacada's Ezra likes candidates who are "proactive" and ask him questions about the company, its competitors and growth opportunities on the job. "These types of questions show me the candidate is confident," he says.

Anything you can do to help the interviewer picture you in the job position will help more to the next level, says Mouse. One of the best candidates he ever interviewed talked about the most difficult challenges he had on the job, specific solutions he devised for them and the benefits that followed. The candidate then asked if there were similar challenges in Mouse's organization. "He let me know what he succeeded in and weaved in a probing question about my company," Mouse recalls.

And smile. Yes, smile, even though the interviewer can't see you. "The other person can hear [a smile]," says Levenson. Show enthusiasm and interest. This is more important with a telephone interview than a face-to-face one because you have such limited interaction with the interviewer. ■

Horowitz is a freelance business and technology writer in Salt Lake City. Contact him at alan@shorowitz.com.

Taking Long-Distance

How to ace telephone job interviews.
By Alan S. Horowitz

BRIEFS

CIOs See Pockets of Improvement

Although IT hiring remains "conservative," some companies are going ahead with systems upgrades that were previously on hold, according to a survey by Robert Half Technology, an IT staff placement firm in Menlo Park, Calif.

Other survey highlights include the following:

- CIOs in New England and the Pacific region project a 9% increase in hiring activity.
- 50% of CIOs say Microsoft Windows administration skills are most in demand.
- 50% of CIOs who are hiring will be seeking staff-level professionals, and 24% will be hiring midlevel managers.
- 88% of CIOs expect no change in hiring activity.

Factors Driving Third-Quarter Hiring



BASE: More than 1,400 CIOs nationwide of companies with 50 or more employees

SOURCE: ROBERT HALF TECHNOLOGY
MENLO PARK, CALIF. 800-222-2222

Study Reveals High Cost of Passwords

Labor costs for configuring and maintaining password systems in companies with more than 100,000 users average \$300 to \$350 per user, according to Aberdeen Group Inc. in Boston. These large companies also incur unnecessary overhead expenses averaging \$35 million. The good news, Aberdeen says, is that identity management systems are eliminating these overhead expenses and showing positive incremental returns.

JAY CLINE

The ROI of Privacy Seals

WE'VE ALL SEEN THEM — the green Truste images, the BBBOnline padlocks and a host of other privacy and security seals. More than 2,000 companies are paying up to \$13,000

per year to display these logos on their Web sites.

But do they pay off?

If the Internet is key to your company's future growth strategy, then you need them to pay off.

Poll after poll says the top reason people don't spend more online is that they're afraid their credit card numbers will be stolen. Visa and MasterCard say they'll reimburse any fraudulent charges, but so far this doesn't seem to be enough for consumers. Web users either don't know about this promise, don't believe it or don't want the hassle of having to seek a reimbursement.

The big question is, do privacy seals give these worried customers the assurance they need to type in their charge-card information? Will their added sales justify the cost of the seals? Use this checklist to find the answers for your company:

■ **Are we like the companies that already have seals?** If you're a world-class e-commerce site, the answer is yes. Almost half of the 50 most-visited Web sites, by my count, display some type of privacy seal. If you hope to be a major technology company, the answer is also affirmative. Of the 14 IT firms in the Fortune 100, 10 display a privacy seal.

■ **Which seal is best?** If you need a privacy seal, either of the two market leaders will do. Truste has the highest market share among the seals, listing 1,374 Web sites, compared with BBB-



OnLine's 701. Truste has nearly a 2-to-1 edge over BBBOnline among the top 50 Web sites and a 3-to-2 edge among the Fortune 100. That said, the Better Business Bureau, with its 91-year history, has higher name recognition among Internet users (93%) than Internet users (93%) than 6-year-old Truste, which claims a 69% rate.

■ **What will it cost us for a seal?** Both Truste and BBBOnline charge an annual fee based on your yearly

revenue. With Truste, companies bringing in less than \$5 million are charged \$999, while those grossing over \$2 billion must pay \$12,999. The pain is less with the BBB: Small companies are charged \$200, while those grossing over \$2 billion pay \$7,000.

■ **What is required to qualify for a seal?** Applying for a privacy seal will require internal staff time to complete the paperwork and assure that your company meets the seal standards.

You'll need to post a privacy policy that conforms to the seal's standards. And you'll need to provide your customers with a way to opt out of direct marketing and having their information sold to third parties, as well as a way to access their information and file complaints.

■ **What return can we expect?** If you're

a large corporation and your average Internet transaction nets you \$10 in profit, you'll need your privacy seal to add as many as 125 more sales per month to make it a worthwhile investment. If you're a small company, you'll need only a few extra sales per month to pay for your fee. A sample of small clients of ScanAlert, an emerging security seal provider, attributes Internet sales increases of 10% to 33% to that seal's placement.

What's my recommendation? If you're a small business with online ambitions, this is an easy call. A privacy seal will pay for itself many times over. If you're a major corporation doing any level of online sales, you may also be leaving money on the table if you lack a privacy seal.

Consider conducting a trial run: Make a one-year commitment to maintaining a seal. Split your Web traffic in two, with only half of your traffic viewing the seal. By comparing the sales from the two versions of your site, you'll have hard proof of whether a seal will be a long-term winner for your business.

Looking over the horizon, your return will be higher if more online consumers come to trust the privacy seals. This may depend on the seals raising their standards — and your requirements — over time. Privacy purists deride Truste and the BBB for not holding companies to a higher level of privacy and for not being more aggressive in their enforcement.

Critics aside, everybody wins if the seal programs are a success. Seal members will do more to protect customer privacy, and online shoppers will have less to worry about when they click Submit. ■

CORPORATE PRIVACY VIEWS

Jay Cline is Computerworld.com's regular privacy columnist. See more of his online columns at

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8:00am to 8:30am

Registration and Networking Breakfast

Welcome and Opening Keynote
Outsourcing Watch 2003:
The Best of Both Shores
Maryfran Johnson, Editor in Chief, Computerworld

9:00am to 9:30am

Industry Update
Evaluating Your IT Sourcing Options
Bart Perkins, Managing Partner, Leverage Partners (an IT consultancy)

9:30am to 10:00am

Business Case Study
Ron Glickman, SVP and CIO, The DFS Group

10:00am to 10:30am

Refreshment Break

10:30am to 11:30am

Outsourcing Strategies
Leadership Strategies in Offshore Outsourcing

Moderator: Maryfran Johnson, Editor in Chief, Computerworld

- Panelists:**
- Marty Chuck, CIO, Agilent Technologies
 - Ron Glickman, SVP and CIO, The DFS Group
 - Jerry McElhatten, Senior EVP of Global Technology and Operations, MasterCard International
 - Greg Schueman, Vice President and CTO, Mercury Insurance Group

11:30am to Noon

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